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ABSTRACTS

I. ORGANIC FIBERS

COTTON AND WOOL. Cotton and woollen fibres and yarns. E. Ostick. *Fibres 6,* 99-101, 103 (September 1945). A non-technical discussion of the nature of various cotton and wool fibers, of their preparation into yarns, and of the properties and uses of the finished yarns and threads contains a table listing the production of cotton in 16 sections of the British Empire (excluding India) for each year from 1933 through 1944. The figures are in terms of bales of 400 lb. each, and take account of the fact that in most of the areas the cotton is planted in one calendar year and picked the next.

HOSIERY. Per cent of men's and women's hosiery by fiber content. Anon. *Rayon Textile Monthly 26,* 464 (September 1945). Statistics on the fiber content of women's full-fashioned, women's seamless, and men's seamless half-hose during 1940 and 1941, and during the first and second halves of 1942, 1943, and 1944, reveal that whereas very little women's hosiery did not contain silk, shipments of silk and nylon for hose were negligible after June, 1943. In the second half of 1944, 99% of women's full-fashioned hosiery consisted of rayon constructions. In the same period, men's seamless half-hose consisted of about equal parts of rayon, cotton, and wool.

NEW DEVELOPMENTS. Review of current textile progress. A. J. Hall. *Am. Dyestuff Reptr. 34,* 385-8 (September 24, 1945). Digests are given of the following: Traill, McLean, and Bovingdon, *Chemistry & Indus. 1944,* 284, and Brit. P. 548,061 on the mothproofing of furs; Brit. P.'s 562,691 and 543,311 on the purification of higher fatty acid esters of cellulose; Steigmann, *J. Soc. Chem. Indus. 63,* 96 (1944), on an improved method for differentiating gelatins and glues; Whittaker, *Chemistry & Indus. 1944,* 269, on dyeing of Rayolanda, Fibro, nylon; Brit. P.'s 550,724, 558,586, 556,925, and 547,844 to Courtaulds on the direct dyeing of nylon; and Grundy, *J. Soc. Dyers Colourists 60,* 205 (1944), on the dyeing of nylon, alginate rayons, rayons, and casein fabrics with chrome dyes.

NEW DEVELOPMENTS. What's new? Progress in rayons and textile auxiliaries. "Outlook". *Silk & Rayon 19,* 981-3, 1005 (September 1945). The following are discussed in detail as significant developments in the textile industry: production of tertiary-dyed acetate rayons of low luster by applying formaldehyde-melamine resins to the rayon before dyeing (Brit. P. 568,438); manufacture of cellulose acetate-formate by treating cellulose with a mixed anhydride of formic and acetic acids (Brit. P. 568,439); development of nylon of improved softness and pliability, and of a melting point between that of the component polyamides, made by melting together a polyamide having secondary amide groups and a polyamide having tertiary amide groups (Brit. P. 568,977); preparation of nylon films which can stand flexing by vigorously mixing for a short period molten plasticizer and molten polyamide lead into the mixing chamber in two separate streams (Brit. P. 568,571); an article by Loasby of British Nylon Spinners, Ltd. (*J. Soc. Dyers and Colourists 61,* 64 (1945)) describing in detail the processes involved in the weaving and knitting of nylon yarns, and in the finishing of the resulting materials; spinning of alginate rayon directly from calcium alginate (Brit. P. 569,212); and avoiding the blocking of orifices in the spinning of casein rayon by passing D. C. current through the coagulating liquor, using the metal spinneret as one of the electrodes, to produce around the nozzle alkali which partially neutralizes the coagulating acid and keeps it from hardening the issuing stream too rapidly (Brit. P. 568,729).

PROPERTIES OF FIBERS. Structural properties of natural and synthetic fibers. W. E. Roseveare, E. I. du Pont de Nemours & Co. *Polymer Bulletin 1,* No. 1, through *Rayon Textile Monthly 26,* 442 (September 1945). A long abstract is given of a talk made before a seminar at the Polytechnic Institute of Brooklyn on "The Physics and Chemistry of High Polymers", which used cellulose as an example of a high polymer. Chemical and x-ray evidence was quoted for the currently-held views on the structure of cellulose, and the effect of the structure on the properties of cellulose fibers and films was discussed with special reference to cotton- and rayon-tire cord.

ECONOMIC ISSUES IN TEXTILES. A CHALLENGE TO RESEARCH. Hiram S. Davis. Research Report No. 9 of the Industrial Research Department, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia, Pa., May 1945; 32 pp.; 50¢. The following questions, which state the basic economic issues facing the textile industry, are posed and some of the factors entering into the answers are indicated, but no direct answers are given: Raw material prices, free or controlled?; Wage rates, too low or too high?; Capital returns, adequate or inadequate?; Production costs, static or reducible?; Foreign trade, restrict or stimulate?; Domestic markets, expanding or contracting?; Distribution costs, wasteful or economical?; Organization, vertical or horizontal?; and Textile business, stable or fluctuating? Research needed to provide the answers is indicated in each case.

I, 1. Vegetable

COLORED COTTONS. Russia starts production from coloured cottons. Anon. Moscow Radio

through Reuter's Trade Service; *Dyer & Textile Printer 94,* 357 (October 26, 1945). A report by Hewlett Johnson in *Manchester Guardian* (reference not given), through *Fibres 6,* 87 (September 1945). "The Molotov Textile Factory has started producing cotton textiles from cotton grown in the natural colours of red, orange, chestnut, dark and light green, yellow and others. After years of experiment, Soviet cotton growers planted several thousand acres [Johnson says 60,000 acres in 1945, compared with 6000 in 1944] of coloured cotton, for the first time on a commercial basis. Experiments disclosed that the natural colours would not fade." "The brown variety is said to be heavy yielding and extremely tough. Ninety per cent. of the cotton grown in Uzbekistan is now long staple against 2.3 per cent. in 1932." Uzbekistan produces 70% of all the cotton grown in the U. S. S. R.

COTTON. Machine-picked cotton shows steady improvement. E. H. Helliwell. *Textile World 95,* No. 7, 123, 125 (July 1945). "Consistent progress is evidenced in improvement of both the grade and staple of all machine-picked cotton . . . With the improved types of pickers now in use, machine-picked cotton will vary from one to two grades lower than hand-picked cotton." "Reported tests of the upland cotton-picker during last-fall's picking at Springfield, S. C., indicate that some loss in grade from machine picking may be regained at the gin by proper cleaning and drying methods." Cotton to be picked by machinery should be defoliated by dusting powder on the plant when the bolls mature, the cotton should be picked promptly after defoliation to avoid darkening from weathering. The present cost of picking cotton by machine ranges from $5 to $6 per bale compared with $40 per bale for hand picking. Research on pickers is proceeding along two lines: development of improved designs, and selection of strains of cotton better adapted for mechanical picking. Three pickers are shown in action. Comparison of 20s to 60s warp yarns made from machine-picked and hand-picked cottons from the same fields (which differed by about 1½ grades) showed them to be, respectively, B and B+ in appearance; and the comparative strength, mean fiber length, opener and picker waste, and card waste were -0.7%, -0.5%, +2.1%, and +0.6%, respectively, for the machine-picked product.

COTTON. The production and characteristics of the world's cotton crops. I. The West Indies. E. Lord, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 315-40 (September 1945). "This *Memoir* is the first of a series in which it is proposed to present a general survey of the world's cotton crops in such a manner that details of their growth, characteristics and production are available to spinners and cotton growers for reference. The characteristics are those measured by the stapling and spinning tests developed at the Institute and the information recorded reflects the very many contacts established by the Institute with cotton growers in all parts of the world. This first part

deals with the West Indies, both British and foreign, and therefore covers the crops of Sea Island and related long-staple cottons. This history of these crops is recorded for the different islands or groups of islands, and crops statistics and fibre characters are collected together in large tables." Besides the three commercial varieties of Sea Island cotton, V135 St. Vincent superfine (new type), Barbados S. I., and Montserrat S. I. (ordinary West Indian Sea Island), 21 experimental and less common British and American West Indian cottons are considered.

COTTON FORECASTING. Estimating cotton supplies by the correlation method. H. M. Leake. *Fibres 6,* 95-7 (September 1945). In India, the amount of cotton planted in irrigated areas is related to the ratio of the prices of spring cotton and wheat by a positive correlation coefficient of 0.53. The amount planted in areas depending on natural rainfall is related to the "effective" rainfall up to July 7 by a positive correlation coefficient of 0.77. These coefficients are said to reflect the two chief factors affecting the yield of a crop—the area cultivated, which depends on the farmers' views of the relative profitableness of the crop; and the suitability of the climate for healthy growth. An analysis of U. S. figures between 1900 and 1930 showed positive correlations of 0.61 between the cotton area and the previous year's price, of 0.34 between cotton area and cotton/corn price ratio, and of 0.78 between cotton price and cotton/corn price ratio; and showed negative correlations of -0.59 between cotton area and previous season's yield, -0.66 between cotton price and season's yield, and -0.65 between season's yield and cotton/corn price ratio. Similar information on yields of cotton in Egypt and other African areas cannot be furnished for reasons that are given in some detail for each area. They include such factors as the absence of a competing crop and relatively constant rainfall. However, even for these areas similar correlations should be made in order to furnish to plant physiologists and breeders the data they require for use in evolving varieties of cotton best adapted to various local climates.

COTTON LINTERS. Linter cotton makes fine paper. William H. Jones, Railway Supply & Mfg. Co. *Paper Trade J. 121,* TAPPI 131-2 (September 27, 1945). "First cut cotton linters has been found to be a satisfactory raw material for rag content papers. A wet lap pulp has been developed that can be added to the beaters without prior processing; its characteristics are given in brief."

COTTON TEXTILES. Cotton textiles in Britain and the U. S. A. I. Anon. *Internat'l Textiles 1945,* No. 4, pp. C-E. The first of a series of articles comparing the cotton-textile industry in Great Britain with that in the United States contains figures showing the decline of the size of the industry in England between 1912 and 1939 and showing the growth in the United States from about 1860 through 1943. The figures for Great Britain show the production and exports of cotton yarn and piece goods, the numbers of spindles and looms in place and active, and

the number employed and the percentage unemployed. For the United States they show the numbers of spindles in place, the numbers of active spindles, the percentage of active spindles, and the hours run per active average spindle; the number of wage earners and the number of hours in an average work-week; the cotton consumed; and the production of cloth.

COTTON TEXTILES. Cotton textiles in Britain and the United States. II. Anon. *Internat'l. Textiles 1945,* No. 5, B-C. The chief differences between the cotton industry in Great Britain and in the United States are: (a) concentration of the British industry in one county, Lancashire, and scattering of the American industry; (b) specialization of the British mills on some one operation and combination in American mills of spinning and weaving; (c) manufacture of small amounts of a great variety of products in Britain and production of large amounts of relatively few, standard products in America; and (d) consumption of 50% of British cotton in England and of 95% of American cotton in the United States. The growth of the Southern U. S. cotton industry is shown by statistics for 1880-1940 on the number of spindles in New England and the South.

COTTON TEXTILES. Cotton textiles in Britain and the U. S. A. IV. Anon. *Internat'l. Textiles 1945,* No. 7, F-G. Comparison of the costs of production entering into the sales price of cotton textiles in Great Britain and in the United States reveals that the costs of materials and fuel, wages, and "other costs and profits" are 72, 19, and 9% respectively, in Great Britain compared with 61, 24 and 12%, respectively, in the United States. Comparison of costs in Northern and Southern United States is limited to the case of one company owning mills in both sections. "For all styles of cloth combined, during the period 1936-1938, manufacturing costs in the Northern mill varied from 48 to 63% of total costs, and in the Southern mill from 49 to 64%. Over the same period labour costs formed a fairly constant percentage of manufacturing costs; for the percale cloth the ratio varied from 54.9 to 57.6% for the Northern mill, and from 48.6 to 51.7% for the Southern mill." The fact that production costs are 20% higher in the United States as a whole is "only partly explained by the higher wage rates."

FIBERS. Some lesser known fibres. "H. E. H." *Fibres, Fabrics & Cordage 12,* 369 (September 1945). Brief descriptions are given of kapok, coir, and palm fibers and the plants from which they are taken.

FIQUE. Lesser known fibres. Fique. Anon. *Fibres 6,* 98 (September 1945). Fique, from *Furcraea macrophylla Baker,* is a fiber resembling sisal grown to a small extent in Colombia. It has been claimed that by the use of up-to-date machinery and improving the "organization" the annual output could be raised to 40,000 tons quickly, and to as much more as the market demanded somewhat more slowly. During the war, when sisal was unavailable, coffee plantations used fique for bags. Until recently, only a very small proportion of the plants have been cultivated, so that it is not known how far above the present 2% the fiber yield can be raised by application of agricultural science. The possible by-products have not been investigated. The fiber is fine and lustrous.

FLAX PREPARATION. Flax spinning controversies. S. A. G. Caldwell. *Fibres, Fabrics & Cordage 12,* 355, 357, 359 (September 1945). The objections voiced at various times to natural, tank-retted, and turbine-scutched flax are discussed in an article that concludes, "As the future of the fibre flax growing industry in these islands [Great Britain] must depend largely on the demand from home spinners, and as the linen industry's independence of foreign sources . . . for its raw material requirements, can only be assured by a healthy flax growing industry at home, it will be to the mutual advantage . . . to understand a little of the problems and requirements of their opposite numbers." An anonymous article also on p. 359, "Green versus Retted Flax" says, "In view of the vast amount of money spent in developing this side [unretted] of fibre flax production, and the experience gained, its commercial possibilities should be fully explored before relegating it to the sphere of wartime expedients."

FLAX STATISTICS. Flax fiber: acreage and production, by countries, year of harvest, 1940-44. Anon. *Linens & Domestics 30,* No. 4, 68 (September 1945).

JUTE. No longer the menial fibre? Anon. *Fibres 6,* 93-4, 103 (September 1945). Improvements in the methods of preparing, selecting, and treating jute fiber allowed jute to substitute for or supplement wool, cotton, and flax for interlinings for suits, upholstery, curtains, screening, embroidery fabrics, jerseys, socks, etc. These improvements in softening, bleaching, batching, "woolenizing", and drafting are discussed.

JUTE. Britain's wartime jute goods imports. Anon. *Jute & Canvas Review 17,* 2 (September 1945). The British government has released statistics on the imports of jute and canvas for the period 1938-44. Imports of raw jute rose from 195,515 tons in 1938 to a high of 200,302 tons in 1940 and dropped to 82,778 tons in 1944. Imports of jute piece goods were 207,798 yards in 1938, 332,630 yards in 1940, 104,553 yards (the lowest figure) in 1943, and 256,799 yards in 1944. Imports of sacks and bags rose from 792,386 cwt. in 1938 to a high of 2,629,340 cwt. in 1940, dropped back to 569,410 cwt. in 1941, and increased steadily thereafter to 992,799 cwt. in 1944.

RAMIE. Ramie prospects and problems. A review of the fibre and processing machinery. Anon. *Fibres 6,* 36-9 (July 1945). Ramie fiber is embedded in cortical tissue permeated by plant gums

which have to be removed as completely as possible mechanically at the time the bark is removed to prevent hardening of the gum. (Hardened gum is expensive to remove chemically.) The crude fiber is scraped, dried, and bundled. The remaining 20-30% gum is removed by boiling with caustic soda, followed by soaping, if the fiber is to be processed on waste silk or worsted machinery. Less thorough degumming precedes the processing of ramie on flax machinery. After degumming and drying the material is opened on a circular hemp softener. The steps of spinning on the above types of machinery are traced. The intersecting gill spreader is illustrated and the wet-spinning frame is diagrammed. Ramie possesses such great strength, luster, fineness, resistance to climatic and atmospheric conditions, and fiber length, that it would be widely used if some mechanical means of extracting the fiber from the plant could be devised. Two patents (U. S. 2 355 999 to Bast Fibre Development Corp. and 2 353 947) are cited as examples of recent attempts to overcome this lack.

GLOSSARY OF TECHNICAL TERMS USED IN FLAX CULTIVATION AND PROCESSING. Flax Committee of the Advisory Council on Scientific Research and Technical Development, Great Britain, Ministry of Supply, London, September, 1944; 12 pp.; gratis. Terms used in the flax industry are classified and defined under the headings: General, Cultivation, De-seeding, Retting, Drying, Flax Breaking, Flax Scutching, Tow Scutching, and Flax Fibre, Tow, and By-Products.

I, 2. Animal

FRENCH TEXTILES. The revival of an industry. Steady progress in France. Roubaix Correspondent of *Wool Record Textile World. Wool Record Textile World 68,* 309-10 (August 23, 1945). Statistics show the state of various branches of the French wool industry in 1938 and 1944, and each month from February through July 1945. The revival is slow, because of shortages of textile chemicals, machinery, and coal. The shortage of coal is the most serious.

MOHAIR. Progress and development in mohair. Ervin Hickman, Universal Trade Press Syndicate. *Rayon Textile Monthly 26,* 461-2 (September 1945). Texas raises 85% of all Angora goats. The goats are sheared twice a year. The hair is bought by Boston and New York buyers, who process the fiber into tops by carding and combing it, before delivering it to mills for blending with wools or other fibers. The processing of mohair from the initial stages through the finished fabrics, carpets, and upholstery is outlined.

SERICULTURE. Time-honoured method of steaming cocoons. Why not follow other methods? V. M. Appadhorai Mudaliar, retired Assistant Superintendent of Sericulture, Mysore Government. *Indian Textile J. 55,* 808-13, 818 (August 1945). Indians engaged in sericulture are advised to kill the silk pupae by drying cocoons in the sun or by applying dry heat, rather than by steaming. Steamed cocoons are kept only with difficulty from damage caused by molds, insects, rodents, and moisture condensed on them while they are in the storage sheds. Indian sun-dried cocoons yield silk of good quality; this is not true of French and Italian sun-dried cocoons.

SERICULTURE. Silk culture thrives in Texas. Anon. *Mfrs. Record 114,* No. 6, 122-3, 196, 199 (June 1945). An experiment in sericulture at Mineral Wells, Texas, directed by Ernest M. Mims, manager of the Chamber of Commerce, is said to be reaching the point where the economics of sericulture in the United States can be appraised. Silk worms are feeding on an orchard of 63,000 mulberry trees planted a year ago. The worms are hardy and have developed none of the dietary diseases to which silkworms are subject elsewhere. If the experiment is successful, however, much of the credit will go to W. S. Roberts, who has furnished reeling machinery to unwind the cocoons. This machinery not only replaces the hand labor which cannot be had cheaply outside of the Orient, but is more efficient in detecting breaks in one filament when two cocoons are being unwound simultaneously to make two-thread silk.

SHEEP. Domestication of sheep. II. B. W. Allred. *Nat'l. Wool Grower 35,* No. 9, 20-1, 36 (September 1945). It is thought that sheep were domesticated very early in man's history, because they are now so dependent on man. Sheep have served man as a source of milk, meat, tallow, clothing, and power to pump water or churn milk; as a sacrificial animal; and as a training animal for future nomad horsemen. Historical evidence is offered on each of the above points.

SHEEP GROWING. New Zealand reminiscences. II. B. J. F. Wilson. *Nat'l. Wool Grower 35,* No. 7, 11-12, (July 1945). The New Zealanders want sheep which are "tidy, compact and thickly fleshed . . . standing on very short legs. Obviously a Romney ewe of this description mated to a good Southdown ram will give the king of lamb that his market is looking for." About 85% of the 33,000,000 sheep in the Dominion are either Romneys or strongly infused with Romney blood, mostly in the North Island. In the South Island, where the country is more rugged and colder, Romneys are in the lower lands, Corriedales and crossbred Lincoln-Merinos or Leicester-Merinos in the foothills, and Merinos in the high country. Since the United States wants lambs weighing twice as much as the New Zealand lambs, since the climate and other conditions in many sections of the United States are unsuited for the Romney, and since the frame of the Corriedale is unsuited to the terrain in the western sheep ranges, the wisdom of continuing to import stud sheep from New Zealand is questioned.

SHEEP SHEARING. The evolution of sheep shearing in America. Edward N. Wentworth,

Armour's Livestock Bureau. *Texas Sheep & Goat Raiser;* reprinted in *Colorado Wool Grower & Marketer 11,* No. 4-3, 7, 9-11 (June 1945). The sheep-shearing business is traced from Colonial times in the United States, when it was a neighborhood business in the sense that haying is now in many sections of the country and when the sheep were washed before shearing; through the spread of sheep raising to the West, the discontinuance of washing sheep before shearing them (about 1860-70), the formation of bands of professional shearers moving from ranch to ranch with the season and the development of public shearing pens; and to the introduction of power shearing on a large scale (about 1895).

WOOL. Importance of the American wool industries. Anon. *Nat'l. Wool Grower 35,* No. 7, 15 (July 1945). The United States is the second largest grower of wool for making apparel in the world. Its annual production varies from 400,000,000 to 450,000,000 pounds. And the American wool-textile industry is the seventh most important industry in the country in terms of employment and twelfth in the dollar value of its product. In the 13 chief wool-growing states, raising of sheep for meat and wool range from first to fourth most important industry in each state. Additional figures are given on the poundage and value of the meat and wool produced in these states in comparison with the value of other products. These facts make it quite disheartening that domestic wool is being sold at a price ceiling of $1.16, which is 10.8¢ below the average cost of production and 7¢ higher than the price of imported foreign wool.

WOOL. Anon. *Wool Record Textile World 68,* 351 (August 30, 1945). U. S. purchases of Australian wool between August 1, 1944 and July 31, 1945 are listed by grade. The purchases totalled 991,200 bales, or approximately 297,000,000 lb.

WOOL. The woollen industry. Post war problems. L. Bellwood. *Textile Recorder 63,* No. 749, 36-7 (August 1945) and No. 750, 42-3 (September 1945). The British woolen industry is having to face labor shortages and the competition that will be offered by other fibers and by other countries whose mills possess more modern machinery. Suggestions are made on recruiting, selecting, and training new workers; on cooperative marketing and technical research; and on substitution of automatic machinery for operations now performed largely by hand. The last section is especially detailed, since it covers opening, carding, spinning, winding, warping, weaving, and finishing. Woolen mills are urged to do research on synthetic fibers, as well as on wool.

WOOL CLIPS. Preparation and packing of the 1945 wool clip. Alexander Johnston and Durham Jones, Wool Appraisers. *Colorado Wool Grower & Marketer 11,* No. 1, 4, 10. (March 1945). The following rules are given for the preparation and packing of wool clips: (a) Keep the fleeces clean; (b) use branding paint very sparingly; (c) don't pack untied or carelessly tied fleeces, and never use baling wire in tying fleeces; (d) remove all tags, dung locks, and stained pieces, and never put a layer of tags in a bag with fleeces; (e) don't pack black and white wool together; (f) don't pack fleeces with burrs with fleeces free of burrs; (g) don't pack ewe, yearling, and ram fleeces together; (h) request separate appraisals on ewe, yearling, and ram wools; (i) don't pack dead wool, crutching, and eye clippings with shorn fleeces; (j) always mark every bag to show the contents; and (k) never pack wet wool.

WOOL PRODUCTION. Shorn wool production. The 1945 lamb crop report. Anon. *Nat'l. Wool Grower 35,* No. 9, 24-25 (Sept. 1945) "The quantity of wool shorn and to be shorn in 1945 is estimated at 322,621,000 pounds, the U. S. Department of Agriculture reported on August 13. This . . . is 24,473,000 pounds or 7 per cent smaller than shorn wool production in 1944 and 69,752,000 pounds or 18 per cent below the record production in 1942. It is the smallest production since 1928." Figures are tabulated for the 10-year average (1934-43), for 1944, and 1945 to show the poundage of wool, the number of sheep shorn, and the weight per fleece for each of the 13 chief wool-producing states and for the United States as a whole. "The 1945 lamb crop, estimated at 28,250,000 head, was about 1 million head or 3½ per cent smaller than the 1944 lamb crop the Department of Agriculture reported on August 3. It was about 2¼ million head or 8 per cent below the 10-year (1934-43) average and with the exception of 1935—following the 1934 drought—it was the smallest since 1929." The number of breeding ewes one year and older on January 1, and the lamb crop docked are listed for 1943, 1944, and 1945 by each of the 13 chief sheep-growing states and for the whole United States.

WOOL RESEARCH. Wool industries long-term research and development. Points from the Report of the Director of Research, the Wool Industries Research Association. Anon. *Textile Mfr. 71,* 193-4 (May 1945). A review of B. H. Wildon's report of the activities of the Wool Industries Research Association for 1944 discusses the following: (a) partition chromatography of wool (a chromatograph on which 19 amino acids have been identified is shown); (b) x-ray and other investigations of the nature of the cystine linkage in wool; (c) Cassie and King's work on the manner in which water vapor is held in wool; (d) the need for cooperative research on fundamental engineering topics (materials, motions, lubrication, and vibration), the design of machinery for manufacturing woolens, and the study of operating efficiency of existing and new machinery; and (e) the need for linking research and teaching closely.

I, 3. Artificial

ZELLWOLLE. "Zellwolle" replaces cotton in German textiles. Walter S. Montgomery, Spartan Mills, and Joe L. Lanier, West Point Mfg. Co. *Cotton (U. S.) 109,* No. 9, 103, 106 (September 1945).

According to the authors, who recently surveyed the German textile industry, the consumption of cotton in Germany decreased from about 240,000 metric tons in 1939 to about 20,000 metric tons in 1943, and the consumption of Zellwolle increased from about 175,000 to 300,000 metric tons in the same period. Zellwolle is a generic term for synthetic fibers. There are three main types: B, the cotton type; W, the wool type; and Zellwolle itself, the jute type. In 1943, 80% of these fibers were viscose type, 17% cupra-ammonium, and 3% acetate. Every sort of military and civilian clothing and equipment were made from these substitutes. The substitutes were used chiefly in the form of staple fibers 40-60 mm. long. They were processed in cotton mills, which made very few changes to accommodate them. The quality of both yarns and fabrics seemed good, "and there were unusually beautiful effects in dyeing and finishing". Heavy yarns and cords for wrapping were made from paper. Other synthetic fibers utilized in Germany to a smaller extent include: Festzellwolle (water-resistant), Dusengefarbt Zellwolle (pigment-dyed in process), and Spinnband Zellwolle (combed or gilled by the producer).

I, 3a. Cellulosic rayons

CELLULOSE PURIFICATION. The hot alkaline purification of cellulose. I. Alexander Meller, Australian Paper Manufacturers, Ltd. *Paper Trade J. 121,* TAPPI 119-31 (September 27, 1945). "A survey and discussion of the literature on the action of hot alkalie on cellulosic materials . . . aims to bring together the results and discussions related to the subject published in the last twenty years . . . The survey treats the subject under the following headings: (*A*) Introduction, (*B*) the hot and cold purification processes and their applicability, (*C*) a comparison of the behavior of sulphite and sulphate pulps in the hot alkaline refining, and (*D*) the action of alkaline solutions at higher temperatures on cellulose, pulps, and on wood." There are 79 literature, but no patent, references.

RAYON. A note on artificial silk. H. M. Mulany. *Indian Textile J. 55,* 816-8 (August 1945). Imports of rayon yarns and piece-goods by India from Japan, Italy, and the United Kingdom from 1920 through 1940 are discussed at some length to show that there is a considerable demand for rayon. Figures on India's production of materials that could be used for rayon manufacture (cotton waste, flax, hemp, and jute) are quoted for the five years 1935-40. The main methods used for the manufacture of rayon are outlined. All these statements lead to a plea for India to start manufacturing rayon.

RAYON. World rayon production and consumption. J. Guthrie Oliver. *Silk & Rayon 19,* 924-5 (September 1945). As a basis for speculation on the export market for British rayon in the postwar period, the world-import trade in rayon yarns for the years 1937-44 is surveyed, in so far as

the available statistics allow. These figures are tabulated for the various British colonies and possessions, and the countries of Europe, Asia, Africa, and North and South America.

RAYON. Rayon went to war: the export increase—meeting vital needs abroad. J. Guthrie Oliver. *Silk & Rayon 19,* 990-1, 994-5 (September 1945). The role played by British rayon exports during the war in creating capital needed for the war is explained with the aid of figures showing the annual exports of British rayon yarns and all-rayon cloth by country of destination for the years 1935-44.

RAYON PRODUCTION. A rayon fantasy as to output and consumption. Anon. *Am. Wool Cotton Reptr. 59,* No. 40, 11-12, 31 (October 4, 1945). Statements recently made that the cloth manufacturing and distributing trade cannot absorb much of an increase in the production of rayon are labelled fantastic in this article claiming that production and probable markets are far from the "balancing point"; that tire cord alone can take about 240,000,000 pounds of rayon annually; and that there are a number of fibers available for making rayon blends. The position of staple rayon fiber is held to be even more favorable than that of filament rayon.

PARCHMENTIZING. Parchmentizing cellulose fibres. W. H. Roscoe (to Tootal Broadhurst Lee Co., Ltd.) Brit. P. 564 583. Cellulose fibers are parchmentized and "vulcanized" without substantial solution of the cellulose by treating them with sulfuric acid of parchmentizing strength after a preparatory treatment with sulfuric acid of less than parchmentizing strength. After the treatment, the reagent is removed by washing or neutralization.

I, 4. Synthetic

SHRINKAGE CONTROL. Reducing heat shrinkage of polythene fibers. E. I. du Pont de Nemours & Co. Brit. P. 564 584. A process for reducing the heat shrinkage of filaments made of polythene or solid ethylene interpolymers, comprises heat-setting previously oriented threads while preventing contraction at a temperature above the desired initial shrinkage temperature, but below the melting solid, until there is no further reduction in tension. Shrinking by heating in the relaxed condition then follows at a temperature at least as high as the initial shrinkage temperature, but below the temperature of the heat-setting operation.

I, 4a. Nylon type

NYLON. New definition for nylon. Anon. *Am. Wool Cotton Reptr. 59,* No. 40, 20 (October 4, 1945). "The following . . . definition was officially adopted by the du Pont Company a short while ago to replace the one given out late in 1939: 'Nylon, n.—A generic term for any long-chain

synthetic polymeric amide which has recurring amide groups as an integral part of the main polymer chain, and which is capable of being formed into a filament in which the structural elements are oriented in the direction of the axis.' " The new definition is clearer, rather than fundamentally different, from the old one.

II. INORGANIC FIBERS

II, 2. Artificial

GLASS FIBERS. Glass fibres. Anon. *Fibres 6,* 32-5 (July 1945). The production, properties, and uses of glass fibers are discussed. Some of the textile uses are as upholstery, awnings, lampshades, and bagging. Fiberglas batt is patented for insulation against heat and sound, and for roofing. Mixed cotton-Fiberglas cloth is employed as reinforcement for plastics; asbestos-glass cloth is used as electric insulating tape. Fiberglas treated with agents to combat the abrasiveness natural to the fibers is used in rope. Various patents relating to the spinning and dyeing of Fiberglas are cited, and several stages in the manufacture of batts and cloth are illustrated.

III. NONFIBROUS MATERIALS

COMPRESSIBILITY OF FEATHERS. Physical measurements on chicken feathers. I. Compression Tests. Julia S. Lee, Alta M. Reeves, and George F. Stewart, Iowa State College. Journal Paper J-1238 of the Iowa Agricultural Experiment Station. Printed in *Am. Dyestuff Reptr. 34,* 377-82 (September 24, 1945). Data on the "compression, recovery, permanent deformation, filling capacity, and weight per unit volume of downy contour [chicken] feathers by length, cut [chicken-feathers] barbs by length, stripped [chicken-feather] barbs, duck down, and goose down" are tabulated, graphed, and discussed. Permanent deformation increased as the feathers got shorter and was most evident in the stripped barbs. The weight of feathers per unit volume increases in the following order: duck down, goose down, cut barbs, stripped barbs, and downy contour feathers.

TEXTILE CHEMICALS. Decline in industrial production lowers demand for chemicals and other raw materials. Anon. *Chem. & Met. 52,* No. 9, 289-90 (October 1945). An article tracing the consumption of chemicals in the United States from its peak in November 1944 through July and August 1945, states that the wartime expansion increased the value of all textile mills in the country by $600,000,000 over the 1939 valuation of $3,900,000,000. Similar figures are given on other industries. The Chem. & Met. index for the consumption of chemicals by various industries during July and August works out that the textile industry consumed 5.0 and 5.4% of all the chemicals during those months, respectively.

III, 1. Plastics, resins, rubber

III, 1a. Cellulose derivations

OXIDIZED CELLULOSE. New form of oxidized cellulose. Anon. *Fibres 6,* 102-3 (September 1945). "Oxidation [of cellulose] in an alkaline solution has produced a type of oxycellulose different from that produced in acid media." "The latter product has a greater reducing power, but the former . . . a greater natural affinity for alkalies. In each case, however, the chain length of the cellulose molecules is shortened, giving the product a smaller tensile strength in fibre form. In most cases cellulose sustains oxidation of both types; it is rarely possible to restrict damage to the one single type." The work of Yackel and Kenyon on cotton cellulose, which they oxidize with nitrogen peroxide—a process as cheap as the production of cellulose acetate—is reviewed briefly, but no references are cited.

III, 2. Adhesives; gums; starches

RESIN ADHESIVE. Anon. *Chem. & Met. 52,* No. 9, 144 (October 1945). A resin adhesive for producing hot-pressed laminates from fabrics, plastics, leather, and rubber consists of Penacolite G-1215, made by the Pennsylvania Coal Products Co., Petrolia, Pa., mixed with walnut shell flour. The adhesive cures extremely rapidly. Penacolite G-1215 can be used alone as an adhesive for wood.

IV. FIBER TO YARN

JUTE MANUFACTURE. Technical developments in jute manufacture. III. Roving and spinning. S. A. G. Caldwell. *Textile Mfr. 71,* 377-8, 387 (September 1945). Roving frames for handling jute now are being made with bobbin capacities 20 to 70% greater and with spindle speeds 20% greater than in older machines, and they can be doffed easily. Other modifications in spindle and flyer design, which permit faster or better roving, are discussed for the specific case of the roving frame made by Douglas Fraser & Sons, Ltd. Spinning frames are now equipped with overhung flyers and automatic doffers. The frame made by J. F. Low & Co., Ltd., is described as an example of a new machine built along these lines, but it is pointed out that old-type spindle-driven flyer frames can be adapted to the new form with an increase in flyer speed of over 50%. Pictures are given of the Fraser and Low frames.

PLATT REPORT. The cotton textile mission to U. S. A. A consideration of the report from the spinner's viewpoint. J. A. Barber-Lomax. *Textile Weekly 36,* 498, 500, 502 (September 14, 1945), 542, 545-6 (September 21, 1945). Comments from the spinner's viewpoint on the "Platt Report" giving the findings of the Cotton Textile Mission to the U. S. A. were made by Barber-Lomax for the General Committee of the Federation

of Master Cotton Spinners' Associations. These comments include remarks on the recommendations made for British industry by the Mission, and they conclude that England probably will adopt automatic winding machinery after the war when it becomes available; high-draft spinning and high-draft carding will be adopted when machine parts are available; general improvements in lighting, ventilation, canteens, etc., will continue; machinery will be reset, renovated, and overhauled where it can be, and replaced where it cannot; many mills will set up research departments; and time-motion studies (they are not called that here, however) will certainly be made to serve as a basis for distributing work—the co-operation of trade unions will have to be secured to make these a success. This last point is the main one in the mind of the author. It is claimed that the structure of the industry, which is horizontal rather than vertical as in the U. S., cannot be altered, and that most spinning mills are efficient when they have their sectional preparations working at full capacity. "It would be a convenience to all spinning firms if the range of counts could be reduced, but it would not mean very much saving in the costs of production."

TEXTILE TERMS. New A. S. T. M. definitions. Anon. *Rayon Textile Monthly 26,* 442 (September 1945). The American Society for Testing Materials has revised three of its definitions of textile terms as given in A. S. T. M. Standard D 123-44 T to read: *"Turn, n.* Rope.—The distance parallel to the axis of a rope in which a strand makes one complete spiral. *Yarn, Cross-Blended, n.*—A single yarn spun from a blend or mixture of different fiber species. Example.—A yarn spun from cotton fibers and rayon staple, or from wool fibers and acetate staple, or from wool and cotton fibers. *Yarn, Self-Blended, n.*—A single yarn spun from a blend or mixture of the same fiber species. Example.—A spun rayon yarn produced from staple of different lengths of different deniers."

IV, 1. Preparation for spinning

CARD CLOTHING. What card clothing for rayon staple fiber. Bill McComb. *Rayon Textile Monthly 26,* 451 (September 1945). Cotton mills changing to rayon fiber should change their card clothing, because rayon does not need cleaning and severe carding. The fine wire used on cotton will become loaded quickly. For a 3.0 denier, No. 90 card wire is recommended. Rayons in coarse deniers mixed with wool take No. 80 or even No. 70 wire.

CARDING FLAX. Efficiency in flax tow carding. Anon. *Textile Recorder 63,* No. 750, 44-6 (September 1945). The carding of flax tow "calls for considerable experience in handling a wide variety of types and grades of tow". The density of pinning, and the speed and setting of the rollers have to be suited to the requirements of the material. Machinery aiding in carding now available includes: automatic card feeds, modern finisher cards with wood clothing, fiber recuperators for recovering usable fiber thrown off with card waste, drawing heads of the Eves type, and automatic units for collecting sliver. The factors affecting the carding action, suitable pin rakes, and the preferred relative speeds of various parts of the cards are discussed. Two pictures and two diagrams illustrate the text.

CARDING WOOL. The distribution and movement of wool on woollen cards. J. G. Martindale, Wool Industries Research Association. Paper, Yorkshire Section of The Textile Institute; *J. Textile Institute 36,* T213-28, disc. P143-8 (September 1945). A theoretical and experimental study of the distribution and movement of wool on the parts of woolen cards concludes: the first worker on the scribbler does the most work and has the highest collecting power (p); the closer the setting, the higher the value of *p;* grinding the card wire increases *p* for a worker losing its point; the greater the speed of the workers, the greater their opening power, but the smaller their mixing power; and the values of *p* are smaller for shorter fibers than for longer ones. It is suggested that scribbler and intermediate workers be run relatively rapidly, say 20-40 r. p. m., and the carder workers slowly, say 3-6 r. p. m. to produce strong yarns; that a larger number of swifts with a smaller number of workers be adopted, e. g., three swifts with four workers each, rather than two swifts with six workers each, to increase the opening action of the carder; and that the workers be run at slightly different speeds to mix the fibers more thoroughly. Weak, non-uniform yarns are produced by running the carder workers at high speeds.

COTTON COMBING. A difficult combing problem. Anon. *Saco-Lowell Bull. 17,* No. 3, 13-16 (September 1945). Fiber diagrams and fiber-frequency diagrams are given to show the high efficiency of the Saco-Lowell High-Duty Double-Side Comber in separating short fibers of soft, rather fine California cotton of middling grade. Although the comber was set for only 12% noils, no fibers 1-3/8 in. and longer were in the noils, only 1.1% of fibers between 1-1/4 and 1-3/8 in. were present, and only 2.5% of fibers between 1-1/8 and 1-1/4 in. Conversely, over 50% of the fibers in the sliver were in excess of the nominal fiber length. "These diagrams should be interesting to manufacturers of quality sheeting . . . It is probable that by stepping up the card production, cutting down the card waste, and then finishing the stock by a combing with a 'low noilage', the mill will, at practically no harmful increase in cost, create a new standard of quality. Since the combed yarns are stronger and more even, it may develop that the increase in efficiency in winding and weaving may almost, if not entirely, offset the cost of the combing operation."

DRAWING SPEEDS. Table of revolutions per minute and their equivalents in feet per minute for various sizes and types of drawing rolls. Anon. *Saco-Lowell Bull. 17,* No. 3, 17 (September 1945). The feet per minute corresponding to revolutions per minute are given for metallic and fluted rolls of 1, 1-⅛, 1-¼, and 1-⅜ in. normal diameter, operating at 200, 225, 250, 275, 300, 325, 350, 375, and 400 r. p. m.

FLY SEPARATOR. Royal card fly separator segregates waste. Anon. *Cotton (U. S.) 109,* No. 9, 113-4 (September 1945). The "Royal Card Fly Separator", patented by Glenn R. Hopper, et al. of Frieda Manufacturing Co., for use in separating the licker-in waste into motes and fly, is described with the aid of a diagram showing the principle on which it works. The separator is placed under the licker-in. As the card operates, the cylinder rotates at high speed and creates a draft between the licker-in and the screen of the separator. By adjusting the back section of this screen, the draft is regulated so that none of the motes will be carried to the cylinder, but will pass through the screen to the back section of the separator, while the fly collects in the front portion.

GINNING COTTON. Handling mechanically harvested cotton at the gin. Charles A. Bennett, U. S. Cotton Ginning Laboratory. *Cotton & Cotton Oil Press 46,* No. 13, 5-8 (June 30, 1945). A year's work on machinery for ginning mechanically harvested cotton has convinced the author that different machinery is needed to process spindle-picked and machine-stripped cottons. Until more is known "about complete requirements", ginners are advised to install individual units in annexes next to the main gins for handling mechanically harvested crops. This is considered the more advisable since "the limited manufacture of spindle pickers will undoubtedly prevent many plantations from machine picking a large portion of their crop next season, and their gins may be forced through shortage of labor to handle a volume of snapped or stripped cotton". Different types of auxiliary equipment for gins developed at the Laboratory or by manufacturers of gins for handling "mechanized cottons" are discussed with the aid of diagrams and pictures.

LONG DRAFT. Long draft simplifies yarn organization. I. Introduction. C. Mallard Bowden, Southern Editor, *Textile World. Textile World 95,* No. 7, 92-3, 194, 196 (July 1945). In an article introducing a series of articles on the long draft, it is stated that carded-yarn mills generally have changed to long draft, and that combed-yarn mills are following the developments in long drafting with interest. Use of long drafts simplifies yarn organization. Tables show: the range of drafts and sizes, and the number of doublings for picking, carding, drawing, combing, and long-draft roving machines; spinning drafts for single and

double rovings of carded staple, and double rovings of combed staple; and the yarn contraction in percent for various twist multiplies between 3.00 and 5.00.

MAINTENANCE OF COMBERS. Upkeep and overhauling of old and new model Nasmith type. Anon. *Textile Weekly 36,* 548, 550, 552 (September 21, 1945). "The current issue of *News Letter,* published by Platt Bros. and Co., Ltd., Oldham, and associated companies, points out that the time has come for a general overhaul of combing machines in most mills . . ." Directions are given for overhauling and maintaining old and new Nasmith combers.

PROCESSING SYNTHETICS. Processing the long-staple fibres. V. Roving. Anon. *Saco-Lowell Bull. 17,* No. 3, 34-42 (September 1945). Changes that have to be made in the settings of parts of the roving frame and parts that need to be overhauled, when changing over from processing cotton to processing long synthetic fibers, are discussed in detail with the aid of diagrams. Not only should changes be made in the organization of weights and drafts, the size of the drafting rolls (unless a condenser is used to prevent "lapping up"), the material for the roll covering, and the weight of drawing sliver, but "if the mill has made up its mind that its future activities will be in the field of the longer staples, . . . there is no question but that they will find it profitable to adopt our new FS-1 Roving Drafting Assembly", covered by U. S. P. 2,323,882, which is pictured, described, and compared with the conventional 3-roll frame. Because lower twists are inserted than when cotton is processed, "many faulty conditions in the sub-assemblies of the roving frame . . . assume greater importance . . . It is, therefore, important to have the flyers, spindles, builder and other assemblies in perfect mechanical condition." The points at which the flyers, bobbins, and spindles should be checked are pointed out in detail. It is recommended that G-38 cones be substituted for the cones used on cotton-roving frames. Roll settings, intermediate drafts, hank-roving sizes, and twist multipliers are indicated for eight synthetic fibers alone or blended with wool.

RAYON-WOOL BLENDS. The blending of fibres. I. Rayon staple combined with woollen or worsted. J. W. Hutchinson. *Fibres 6,* 89-92 (September 1945). Fibro, the viscose rayon staple manufactured by Courtaulds, Ltd., can be blended with wool to make both woolen and worsted yarns. At the beginning of the blending, Fibro and wool are carded separately. Slivers of the two are then combed together on drafting rollers and then on the Noble comb. Finished top is subjected to some six or seven drawing operations to form the roving. After the blending process has been finished, the roving is spun, and the yarn is either wound on bobbins for the filling or on cheeses which are then

warped and beamed for the warp. Fibro for woolens usually is 4.5 denier and 2 in. long; for blending with 64s merino wool it is 3-4.5 denier and 4 in. long; for fine crossbred of 50-56s it is 4.5 denier and 6 in. long; and for coarser counts it is 8 denier and 8 in. long. Since Fibro does not take wool dyes, it is supplied in white, navy, nigger, bottle green, and black for making mixtures.

SYNTHETIC FIBERS. New field for cotton mills in synthetic fibers. Larry A. Landers. *Cotton (U. S.) 109,* No. 9, 104-6 (September 1945). Yarns made from synthetic fibers can be woven on conventional cotton looms, and yarns containing fibers up to about 1½ inches long can be spun on existing cotton machinery, if the settings are altered a little. Blends of wool with the longer synthetic fibers require the use of special preparatory and spinning machinery. Blending has to be thorough, the card should make no more than a trace of waste, and the card is followed by a special drawing frame and special roving equipment. The roving frame should be equipped with a special drafting assembly, long rolls, and equipment for providing the proper pressures. Double roving is a "must" in the production of yarns for the better grades of cloth. Warp preparation is accomplished with standard cotton mill equipment. "The special equipment available should enable the mill to make a quality product from these blends at a cost—exclusive of the raw material item—comparable to that incurred in making a cotton yarn of a similar count."

COMBER. Continuous-operating high-production comber. F. Raubitschek. Brit. P. 564 093. Cotton and other fibers are combed "by gripping the end of the uncombed lap, detaching the tuft from the lap, combing one end of the tuft, inverting the tuft, combing the other end of the tuft, and overlapping on the combed fibers". The machinery for accomplishing this process is described at length, with the aid of two diagrams, in *Textile Mfr. 71,* 222 (May 1945).

CARD COVERING MACHINE. Kardbeslag Fabriks Aktiebolaget. Brit. P. 564 214. A machine for applying card clothing has the braking device free to move on a guide bar, and an auxiliary brake arranged in the path of the fillet going to the other brake. The machine can be used on fillets of any width without changing parts.

PERMANENT MAGNETS FOR INDUSTRY. Information Bulletin 2 of The Arnold Engineering Co., Chicago, Ill., June 1945; 23 pp.; gratis. A short account of the company's methods of manufacturing magnets contains numerous data on the magnetic and engineering properties of the common magnetic steels, Alnico, and miscellaneous magnetic alloys.

IV, 2. Spinning, doubling, twisting, winding

CYLINDER-WHORL RATIOS. Anon. *Saco-Lowell Bull. 17,* No. 3, 46 (September 1945). A table shows the ratio between cylinder and whorl on spinning frames equipped with a tape driving using "thin tape", averaging 0.035 in. thick and estimated to be 98% efficient. The figures are for 8, 9 and 10 inch cylinders, and for 10 whorls varying in size from 15/16 in. to 1-⅝ in.

GILL SPINNERS. Gill spinners versus auto spinners. Anon. *Fibres, Fabrics & Cordage 12,* 377 (September 1945). Although modern gill spinners have much to recommend them, the auto (or Jenny) spinner is holding its own for spinning hard fibers, possibly because of the following advantages: a wide range of different weights of yarn and twists can be produced simultaneously on the two spindles without much capital outlay; the nipper die controls lumps in the sliver and tends to keep the yarn constant in weight despite irregularities in the sliver; and power consumption per spindle is low. The advantages of the automatic gill spinners are their high speed, the automatic doffing, the good appearance of the yarn, the ease with which calculations of twists and drafts can be made, the larger output per operator, and the superior pinning.

SPINDLE CONSTANTS. 100% production constants for 1-¼ in. diameter front roll. Anon. *Saco-Lowell Bull. 17,* No. 3, 33 (September 1945). Production constants, which when divided by the yarn number give the pounds of production per spindle per hour provided the spindle is 100% efficient, are tabulated for front roll speeds between 100 and 350 r. p. m. (The front roll is assumed to have a diameter of 1-¼ inch.)

SPINNING. Elements of spinning frame power consumption. Anon. *Saco-Lowell Bull. 17,* No. 3, 1-12 (September 1945). Exhaustive tests were made with the co-operation of "one of the major electrical equipment companies" of the power required by each element of the spinning frame. The tests were made in "a large New England mill" on a Saco-Lowell frame built in 1925 having 252 No. 2 McMullan spindles of 3-¼ in. gage, 7-½ in. traverse, rings 2 in. in diameter and with No. 1 flanges, 3/0 travelers, a 10 in. cylinder on ball bearings, and warp-build bobbins. Yarn of 21 warp count was spun from 1.35 single roving of American Strict Middling cotton. Power was supplied by a 10 h. p., D. C. electric motor, whose input was measured carefully, and whose speed was regulated closely and measured by three types of instruments: a strobotac, a hand tachometer, and a recording electric tachometer. In most cases the spindle speeds were measured by the strobotac. Data are discussed and are plotted to show: the effect of the cylinder speed and the levelness of the frame on the power consumed; the effect of the tension on the tape on the power consumed at various points of a doff; the effect of the pulley design on the power consumed at various points of a doff; and the

power consumed by various parts of the spinning frame at various points of a doff. The resistance offered by air to the movement of the various parts of the spinning frame is considered the chief factor affecting power consumption that can be decreased through proper design. In the future, Saco-Lowell frames will have as low cylinder speeds as possible by the use of spindle whorls of small diameter; the tension on the tapes as low as possible and the tapes themselves thin and smooth; the contours of the tension pulleys as smooth and the diameters as small as is consistent with good design; and the spindles with wooden sleeves and the yarn carriers of hard paper.

TWIST CONSTANTS. Checking twist constants on ring testers. John Middleton. *Cotton (U. S.) 109,* No. 9, 116-7 (September 1945). A check made on the twist constants and the twist actually being put in yarns was studied for one particular twister in an unnamed mill. The slippage of the loaded spindles was found to be about 4%, including the traveler lag, which "is sufficient to affect the twist and definitely must be taken into account when figuring twist constants". The method of calculating the slippage is shown in detail.

TWISTER ROOMS. Control of details aid twister room operation. Horace L. Pratt. *Textile World 95,* No. 7, 113, 115 (July 1945). "Close control of manufacturing details is necessary in successful twister-room operation." Mechanical counting devices for controlling the length of yarn twisted, which are set by hand, must be checked before the frames are doffed, and must be reset after frames have been operated for special purposes, such as cleaning. Regular checks should be made of the twist put in the yarns and of the spindle speed. Variations that can arise are illustrated for a yarn supposedly containing 3.97 t. p. i., which varied from bobbin to bobbin from 3.94 to 4.12 t. p. i., and individual specimens of which varied from 3.70 to 4.30 t. p. i. Speed tests on 20 spindles showed their speeds to differ by 100 r. p. m. in the range of 2750 r. p. m. The causes of the extreme variations should be determined and remedied. Jobs must be assigned to specific individuals and the work load must be distributed fairly. Orders should be received in writing. The second hand should be responsible for the status of the orders, for instructing checkers on the marking of yarns to be used in orders, for making out style tags on the frame, and for reporting the activities of the overhauling crew to the overseer. It is wise to have the operator count the yarn ply once each doff to avoid incorrect plies, and to have the checker make out the yarn tags before the frame is doffed. Supplies, such as travelers and change gears, should not be kept in the twister room. Whatever system of repairing and overhauling is adopted, the overseer must know and keep track of the schedule.

WIPING MULES. Wiping down on mules.

Philipson's patent "Cedar" motion: effective on paste. Anon. *Textile Weekly 36,* 492, 494, 496 (September 14, 1945). Pictures and diagrams, and a long explanation accompany an enthusiastic recommendation of Philipson's patent "Cedar" automatic wiping-down motion for mules, which is said to work reliably and simply on mules for fine or coarse spinning, including paste mules.

WORSTED SPINNING. High drafts in worsted spinning. Results of investigations into the possibilities of high drafting on the English and Continental systems. L. Goodman. *Textile Mfr. 71,* 368-70 (September 1945). In an investigation of the possibilities of using high drafts on English and Continental worsted spinning frames, 64s Australian wool tops of the same lot were made into 1/48s and 1/24s counts using drafts of 8, 16, 24, 32, and 40. The ends down, the percentage waste, and the comparative strength and elongation before break were determined for all the yarns made. The English equipment was a cap spinning frame operating at 6200 r. p. m., and the Continental equipment a ring spinning frame operating at 4250 r. p. m. As might be expected, fewer ends broke when spinning the thicker counts; the Continental system produced better yarns and was capable of working on drafts of 24 and 32, while the English system was not; it is commercially feasible to employ higher drafts than normal; the higher the draft, the higher the percentage of waste; and successful high drafting depends on fiber control, especially the short fibers—the fact that a much closer front ratch can be obtained on the Continental frame (as is shown by setting diagrams) has given the better results indicated.

CLEARER ROLLER. Bottom clearer roller for drafting rollers. Dominion Textile Co., Ltd. Brit. P. 564 188. A clearer roller for drafting machinery has a pair of small control rolls behind the front rolls and close to the nip. A pivoted cradle has arms extending beneath and supporting the clearer roll. The ends of the arms are provided with a hooked finger to engage a collar on the clearer roll. The opposite ends have a clip which fixes the arm to a tube, sliding on a shaft journaled in extensions of the frame. To each clip is connected a weight to cause the arms to be urged against the roll. It is possible to swing down one of the arms without disturbing the other arm and one end of the clearer roll may be lowered without dislodging the other end.

IV, 2a. Cotton; vegetable fibers

SPINNING FLAX. Flax spinning: treatment of roving for uniform drafting. S. T. M. Svenzon. Brit. P. 564 107. Roving of either long or short flax fibers is built on bobbins made from chemically resistant material, and the bobbins are subjected to treatment for one or two hours with an alkaline solution at about 85-95°C. and having a

pH of 12.5-13, which has been buffered strongly with a solution of the alkaline salt of a weak organic acid. This treatment partly dissolves the pectin which binds the fibers together. The wet roving is spun immediately on a wet spinning frame.

IV, 2b. Wool; worsted

SPINNING WOOL. Developments in woollen spinning machinery. G. Marshall. *Textile Mfr. 71,* 197-8 (May 1945). Improvements made or to be made to the woolen, mule-type spinning equipment manufactured in England are listed for the Charlesworth mule, the Rabbeth-type mule, and an undesignated type of mule manufactured by Wm. Whiteley & Sons, Ltd.; and the mule made by Asa Lees, Ltd. For the most part, the improvements are in the driving arrangements, and consist of such things as increasing the diameter of the tin rollers, taking the winding chain from the top of the quadrant barrel, providing friction brakes and clutches, and allowing the speed of the spindles to be varied at will. Designers are trying to work out some method of fitting woolen mules with long back-shafts, such as are used on cotton and worsted mules. They are working also on woolen ring frames, which up to now are not as efficient as the new types of high-speed mules. Platt Bros. & Co., Ltd., make woolen ring frames, but "are not at the moment in a position to release details of new features".

IV, 2e. Winding

BOBBIN LIFTER. Bobbin-lifter, developed for Monarch Mills by Callaway Institute, lightens doffer's load. Anon. *Textile Bull. 69,* No. 2, 22 (September 15, 1945). "A simple and inexpensive mechanism" for releasing bobbins from their tight fit on the spindles before doffing is started was developed by Clarence M. Asbill, Jr., of the Callaway Institute, Inc., of LaGrange, Ga., on the request of Monarch Mills of Union, S. C. The lifter, which is covered by U. S. P. 2,381,482, is described briefly with the help of diagrams.

LARGE PACKAGES. Some interesting large packages. Anon. *Saco-Lowell Bull. 17,* No. 3, 20-21 (September 1945). "Some typical packages taken from some of the more recent [Saco-Lowell] installations" are photographed and described with the aid of a table giving the significant data on them in a short article praising wooden sleeve spindles and paper tubes. The packages are 8's, 10's and 20's.

WINDING CAM. Saco-Lowell non-sloughing cam designed especially for high-speed winding. Anon. *Saco-Lowell Bull. 17,* No. 3, 18-19 (September 1945). A cam for use on the Barber-Colman Automatic Spooler, designed to decrease yarn breakage, is described with the aid of a photograph of the cam, and diagrams of the method in which the yarn is laid on the bobbin and of the wind produced. Named the Saco-Lowell Non-Sloughing Cam, it has two lobes, one a 90° sector, and the other 270°. When the cam revolves "the rate of traverse of the ring rail on the down-stroke is exactly 1/3 of the rate of travel on the up-stroke. Under these conditions the coils of yarn laid on the down-stroke are close together and are bound in place by the wider-spaced coils laid on the up-stroke. A special feature of this cam is the acceleration at the heel to improve the cover and lay at this critical position of the winding cycle. Frames and builders equipped with these new cams produce a very firm package that contains more yardage than a bobbin made with the same ring and overall traverse when the conventional warp wind is used . . ."

YARN-PIECER. Electrically-driven piecing machine. Joseph Stubbs, Ltd. *Textile Mfr. 71,* 200 (May 1945). Knotless yarns can be made in long lengths by using an electrically-driven, yarn-piecing machine "designed in conjunction with Mr. Allan Draper . . . of Messrs. Richard Haworth & Co., Ltd. . . . [and] produced by Joseph Stubbs, Ltd." Both bobbins are taken to the piecing machine. "There the twist is taken out of a length of yarn from each bobbin and the single strands of one bobbin are twisted or spliced into the single strands of the other bobbin. Then the twist is again put into the yarn, making a perfect piecing without knots, and the two bobbins are ready to be replaced in the winding frame . . . Production on 20s/3, 15 t. p. i., is stated to be 50 piecings per hour over one week of 48 hours."

IV, 4. Products

RAYON YARN. War-end situation in rayon yarn deniers and filament numbers. H. R. Mauersberger, Technical Editor, *Rayon Textile Monthly. Rayon Textile Monthly 26,* 448-50 (September 1945). The semi-annual survey of the deniers and filament numbers of American rayon yarns, high tenacity rayons, and rayon-hosiery yarns was made this time just at the end of the war, i. e., before the War Department had cancelled its orders. Comparison of these figures with similar figures printed in September 1944 and 1943 shows that the number of yarns made decreased from 166 to 158; the largest reduction was in viscose, which showed 118 items in 1944, against 110 in 1945; acetate offered 41 items in 1945 compared with 40 in 1944; and cuprammonium offered 8 instead of 7 items. U. S. Rayon Corp. is closed. As before, the size and quality of yarns of each manufacturer are listed.

RAYON-TIRE CORD. Continued heavy demand for high-tenacity rayon yarn. Anon. *Rayon Textile Monthly 26,* 428 (September 1945). Reports from a number of large producers of rayon yarn for tire cord are quoted to show that the industry expects no post war slack in the demand for this material.

IV, 5. Applications as yarn

"ROPE POOL". Quartermaster rope pool at Jeffersonville completes first year. Army Service Forces, Jeffersonville Quartermaster Depot. *Nat'l Canvas Goods Mfrs. Review 21,* No. 6, 32 (September 1945). In its first year of operation, the Quartermaster rope pool started in July, 1944, at Jeffersonville, Indiana, handled approximately 38,000,000 lbs. of rope for the Army, for plants producing goods for the Armed forces, and for foreign nations under Lend-Lease. The rope was valued at $15,000,000. More than half of it, 20,000,000 lbs., was 5/16-in. sisal, which was used to fabricate tents of all types, cargo nets, tarpaulins, barracks bags, cargo sleds, and packboards. Some indication is given of the methods by which the Pool secures and distributes its rope.

V. YARN TO FABRIC

V, 1. Preparation

CONDITIONING. Modern yarn conditioning. Anon. *Textile Recorder 63,* No. 750, 39-41 (September 1945). Three machines for conditioning yarns on mule cops or ring bobbins by spraying them with known amounts of moisture and one for pumping conditioning liquor through yarns on cones are described with the aid of photographs furnished by H. Cheetham & Co., Ltd. Two of the machines are portable. All of them allow the amount of moisture to be regulated closely and to be uniformly distributed through the whole batch, no storage of the yarn is required, no extra skips are necessary, the insides of the tubes or ring bobbins remain dry, and the machines occupy relatively little floor space.

COTTON SLASHING. Hook reeds for cotton system slashing. Frank H. Kaufmann, Steel Heddle Mfg. Co. *Rayon Warp Sizing Specialist,* pp. 1-3 (September 1945). The Scotch closed hook reed for inserting leases in warps on slashers has been replaced almost entirely by the open top hook reed. The open top reed has a metal cap placed over the open top to provide a stop for the yarn when it is raised during the leasing operation. A stand for holding the hook reed and the split rods is diagrammed and its advantages are extolled. It consists of two uprights bolted to the floor. During the running and leasing, the hook reed is set in the larger, and the split or lease rods are in their respective position on the smaller of the two. The rack which supports the rod during leasing is adjustable to any angle, and when not in use can be swung to the center to give free access to the hook reed and the warp sheets. During the laying in of the section beam sheets into the hook reed, the reed is moved to the smaller stand. Upon completion of this operation, the reed is moved to its position on the large stand. Split rods used in slashing are chromium plated to secure a smooth, hard surface. These rods are examined periodically. A double

hook reed has been developed to lease an odd number of section beams. It will also lease an even number of section beams, but the arrangement of the threads in the lease is different than with the single hook reed, and is, in general, not as useful for "color pattern work, or when right or left hand twist yarn is used" as the arrangement obtained with the single hook reed. The thread arrangements for both types of reed are diagrammed.

LINEN WARPING. Technical progress in linen manufacture. Warp-beaming. "Technologist". *Fibres 6,* 40-42 (July 1945). Automatic machinery which has been developed recently for warping and beaming of linen is described and illustrated. The machinery includes high-speed warpers in which the yarn is withdrawn over-end, mechanical knotters worn on the hands of operators for tying threads of old and new warps, the Titan warp tying-in machine (which can be used for threads other than linen), and the Moore & Avery reaching-in machine.

V, 2. Sizing

SIZING. Sizing of spun rayon yarn: methods of application. Good weaving qualities must be combined with easy removal. "Technicus". *Silk & Rayon 19,* 989, 997 (September 1945). Spun rayon yarns are sized on slasher systems like those used for sizing cotton yarns. The sizing mixtures usually contain starch from wheat, sago, rice, tapioca, maize or potatoes; tallow; a deliquescent substance, such as glycerine, calcium chloride, or magnesium chloride; weighting agents; and an antiseptic, such as phenol, zinc chloride, or Shirlan. Both the application and removal of size should be done carefully and completely. The following factors affecting the uniformity of sizing films are discussed: viscosity of the size, speed of the slashing machine, type of warp, twist factor of warp, and care of the slashing machine. It is claimed that cloths which have to be singed before preparation should be sized with special compounds—mixtures containing sago are unsuitable. Sizes made from unconverted starches "easily become occluded, or form insoluble films in the presence of metallic salts and under the influence of heat", which may account for some of the troubles met in dyeing and finishing cloth. Except for a sizing agent for singed cloth, no specific sizing formulas are given.

SLASHING CONTROL. The Westinghouse motor drive. An interesting development in the slashing department. Anon. *Saco-Lowell Bull. 17,* No. 3, 27-32 (September 1945). Numerous photographs and a diagram illustrate an exposition of the Westinghouse slasher drive with Rototrol tension control for slashing warps. In this system, individual D. C. motors drive the size box, the 7-in. drying cylinder, the delivery roll, and the wind-up beam. The individual motors are all synchronized

and controlled accurately by a central unit (the Rototrol), which is essentially a small, D. C. generator with its magnetic circuit excited by a number of field windings. Vibrating relays, contractors, or other sensitive or delicate parts are lacking, because the Rototrol functions by virtue of the interactions of the magnetic fields. Control stations are provided at each of the points to which a motor is attached, and the speed of the individual motor is regulated at its station. After all the speeds have been set, the Rototrol prevents undesired variations, although it is possible to adjust each station independently while the slasher is in motion. The moisture content of the warp can be regulated by using a moisture-control unit as a sub-assembly for the multi-motor drive. Automatic controls can be included in the Rototrol circuit for keeping constant the temperatures of the size box and cylinder, and the size-box level. Use of this system is said to control the tension on the wind-up beam to a degree never attained with friction drives and other drives of the conventional type.

BATTERY FILLING. Proficient battery filling. H. E. Wenrich. *Rayon Textile Monthly 26,* 281-3 (June 1945). Rules are given for battery fillers and bobbin changers, and the importance of their jobs is stressed.

V, 3. Weaving

LOOM FIXING. Loom fixing. III. Draper loom fixing. Ben H. Crawford, West Point Mfg. Co. *Cotton (U. S.) 109,* No. 9, 118-20, 130 (September 1945). A very brief explanation of the working and capabilities of the Draper loom contains a list of the chief defects found in woven cloths, and short statements of the things which cause them.

V, 3a. Looms

LOOMS. Looms and practice in weaving. H. V. *Textile Mfr. 71,* 181-2 (May 1945). Manufacturers of Lancashire looms are urged to make changes that decrease the physical labor of weaving. The changes suggested here are: use of some system of weighting the warp beam that does not involve the lifting of heavy weights after unweaving, but that is more rapid in action than the systems of levers sometimes substituted for heavy weights; use of a better system of tensioning the warp, and making the ruffles from stainless steel; use of locknuts on vibrating parts; standardization of the measurements of lamb-rods, depths of healds and gage, and length of reed wires suitable for different weaves; arrangement of the stop-rod, which presses against the reed, at least ¾ in. below the edge of the sley-race when the reed is fixed, to allow the passage of knots and thick places; provision of a mirror on the top rail to allow the weaver to see broken and entangled threads at a glance; and increasing the length of the weft, to save the

weaver the fatigue of constantly reshuttling and restarting the loom.

LOOM. Hattersley automatic bobbin-changing loom. "Tuner". *Textile Mfr. 71,* 381-3, 386 (September 1945). A bobbin-changing mechanism has been incorporated in the latest automatic shuttle-changing loom manufactured by Hattersley. The new loom is provided with a strong underpick to deal with long pirns and heavy shuttles. It operates at 108 picks per minute and has a reed 84 inches wide. There is a four-drop box on the left and a plain box on the right, with a magazine holding four rows of bobbins at the front. Detailed descriptions, illustrated with ten diagrams, explain the picking, bobbin changing, and shuttle checking operations.

LOOMS. A fresh approach. End noise with a silent loom. Anon. *Textile Weekly 36,* 349-50 (August 24, 1945). Noise and dust are claimed to be the two chief reasons for the trouble the English cotton industry is having in recruiting new weavers. Loom designers are urged to develop noiseless looms, possibly by making them with fixed shuttle boxes, and with much lighter sley and reed fixing than is now customary. If the sley were driven by something different from the usual crank, a large and relatively slow shuttle could be used, and not only would much noise be eliminated, but the flight of the shuttle could be interrupted more easily, when desired. In his introductory note, the editor states that the author "offers some original suggestions . . . There are points of practical weakness in his case, but plenty of evidence of constructive thinking."

SMALLWARE LOOM. High speed smallware loom. "A Technical Correspondent". *Textile Recorder 63,* No. 750, 47-8 (September 1945). Saurer is building a new high-speed loom for weaving ribbons up to a maximum width of 60 mm. The loom is available in groups of 3, 6, 9, and 12 heads each. It has a single shuttle regardless of the number of heads. Each head operates independently, and may be prepared for different ribbon. Speeds as high as 300 picks per minute can be obtained. A long description illustrated by two photographs ends with the statement, "The outstanding features of the loom may be summarised as follows:—High output; Great variety of manufacture due to each head being capable of weaving a different ribbon; Automatic warp and weft stop motions; High production as a result of the minimum of stoppages owing to it being possible to stop each head automatically and individually, and by the use of large-size weft pirns; Safety in operation, due to the directly and positively driven picking motion; Sturdy structure of sley which ensures a powerful beat-up and which can be adapted also for the production of closely-woven ribbons; Simple type regulator for changing the number of picks per inch without having to change any gear wheels;

Small floor space required; Easy operation, due to all vital parts being clearly visible."

V, 3b. Loom parts

FLYING SHUTTLES. Loom craft. III. Flying shuttles. W. Middlebrook, Brocklehurst-Whiston Amalgamated, Ltd. *Textile Mfr. 71,* 379-80 (September 1945). The causes and remedies of flying and rough shuttles are considered. The causes of shuttles flying out of the loom are: picking too soon, temples too high, top shed too low, round-backed or round-bottomed shuttles, reed too forward, box too low, raceboard too high, hair or yarn locked in the shed, box sticking or not locking properly, shuttle turning over, hole in picker too low, spindle head too low, or box mouth too narrow. Roughness on the top of a shuttle can be caused by "rising at box mouth due to (a) flight; (b) temples; and (c) shedding . . . While for the back part, rubbing on reed or back plates, protruding screws in swell, broken or rough swells, broken swell spring, or weft fork grate may be causes of trouble. Roughness on the bottom of the shuttle may be brought about by rough box plate caused by broken picker, woodscrews projecting above raceboard, boxes too high, or shuttle bearing down too hard. The main points for the front of the shuttle are: picking too late or too hard, faulty alignment of reed, and rough box front."

LOOM HARNESS. New harness motion installed at Bartson. Anon. *Textile World 95,* No. 7, 133-4 (July 1945). A new harness motion for looms patented (USP 2 358 884) by W. D. Stegall, superintendent of Albert J. Bartson, Inc., has been installed on duck looms at the Bartson's Charlotte Mill. This motion, which is driven from the side of the loom by an extension of the camshaft, is pictured and explained at some length.

PICKER STICK. Laminated plastic picker stick. Anon. *Rayon Textile Monthly 26,* 487 (September 1945) and *Textile Bull. 69,* No. 2, 54 (September 15, 1945). "Pregwood", developed for airplane propellers by The Formica Insulation Co., Cincinnati has been used by the E. H. Jacobs Mfg. Corp. of Charlotte for making picker sticks having several times the endurance of hickory sticks. Blanks produced at the Formica plant are purchased by the Jacobs firm, which machines them into picker sticks sold under the trademark, "Plyweld."

REED LIFE. Specifications and care determine reed life. H. Mochrie. *Textile World 95,* No. 7, 127, 129 (July 1945). Reeds that were made properly in the first place, that have been fitted properly in the looms, and that are stored properly between usings will last indefinitely. Methods of checking and adjusting new reeds are outlined, as are also methods of cleaning and repairing used reeds.

SHUTTLES. Starting new shuttles in the loom. H. E. Wenrich. *Rayon Textile Monthly 26,* 453-4 (September 1945). The three chief methods used in placing bobbins in shuttles are discussed, and the preparation of new shuttles for starting in the loom is described briefly. The main points of both parts of the article are illustrated with photographs.

V, 3c. Control devices; stop motions; bobbin selectors

STOP-MOTIONS. Warp stop-motions. V. Consideration of V-lever mechanical, heavy woollen, French, American and German warp stop-motions. I. Laird. *Textile Mfr. 71,* 213-4 (May 1945).

STOP MOTIONS. Mechanical warp stop motions. VII. I. Laird. *Textile Mfr. 71,* 384-6 (September 1945). Explanations are given of the steel-rod-guide method of warp pinning, the pinning with metal-slat guides, and the correction of pinning mistakes. Photographs and diagrams are given to clarify the points discussed.

BOBBIN. Moulded plastic bobbin. Columbian Rope Co. Australian P. 119 870. A bobbin having high impact strength and which will not chip if dropped has its head portion made from laminates or discs of hard fibers, e. g. sisal, coated with a thermosetting or thermoplastic binder, e. g. phenolformaldehyde resin, and molded.

V, 4. Knitting

HOSIERY MACHINES. Flat-bed hosiery machines being improved. Anon. *Textile World 95,* No. 7, 109, 111 (July 1945). "Powell Knitting Co. [flat-bed hosiery] machines designed in 1878 and built for own use only are being improved again for post war period. Past improvements include the Powell toe, which is knitted complete with no looping, and elastic top hose, which are knitted in one operation. Mass production of simpler styles in one operation is aided by new production-control system and efficient plant layout. Company shop in Philadelphia maintains and improves flat-bed machines." It is stated that although Powell machines knit slowly, they are so simple to operate and keep in order that they compete with modern circular knitting machines for knitting of seamless socks.

KNITTING MACHINE. Sinker and catch-bar for knitting machines. William Cotton, Ltd. Australian P. 119 867. The butts of each jack sinker and of the dividing sinker of a knitting machine are tapered in width, and the groove of the catch-bar is tapered correspondingly, to "obviate the likelihood of accident being caused should the butts of certain jack sinkers be slightly misplaced in relation to the catch-bar groove." This arrangement also "provides the sinkers with an adequate length of bearing."

KNITTING MACHINE. Circular knitting machine. Interwoven Stocking Co. Brit. P. 564 189. A circular knitting machine has coaxial, super-im-

posed needle cylinders, with needles transferable from one to the other by selectors, whose butts are engaged by levers acted on by a pattern drum. Separate sets of selector needles are independently controlled to keep one set of levers inoperative, while levers of another set are moved in and out of operative position. A mechanism is provided to orient the pattern drum to positions for starting each of successive articles produced, and for stopping the drum at predetermined points to maintain the same needle selection for a number of courses.

KNITTING HOSIERY. Ribbed effect in hosiery tops. Hemphill Co. Brit. P. 564 391. Hosiery tops are knit "to provide a rib effect" on a needle and sinker machine by feeding a yarn to all of a group of needles at one feeding station, feeding a second finer yarn at a second feeding station to alternate needles of the group, and causing the alternate needles to draw the second yarn over the nibs of the sinkers.

ACCORDION FABRIC. Knitting accordion fabric. Hemphill Co. Brit. P. 564 397. In a method of knitting an accordion-type fabric, one yarn is knitted at all needles at one feeding station and an accordion yarn is drawn into stitches at alternate needles and is floated behind intermediate needles at a second feeding station. Floats of the accordion yarn are elongated by extending them, while robbing material from the adjacent stitches. Needles and sinkers are controlled independently and sinkers are constructed with nibs having inclined edges, so that additional movement of the sinkers will extend the floats as they are raised upon the inclined sinkers.

KNITTING FABRICS. Knitting: horizontal stripes and spliced areas in fabric. H. H. Holmes and A. H. Widdowson (to Wildt & Co., Ltd.). Brit. P. 564 510. A mechanism for producing horizontal stripes and spliced areas in knitted fabric comprises a number of movable yarn guides, one or more for striping yarns, others for a ground yarn and a splicing yarn, respectively. The guides are interchangeable so that a striping yarn is supplied to a section of needles while the ground and splicing yarns are substituted for the striping yarn and supplied to the remainder of the needles during a succession of courses of knitting. In the intervals, the ground yarn only is supplied to this section of needles, and both the ground and the splicing yarn are supplied to the remainder of the needles.

V, 5. Pile fabrics, laces, embroideries, netting

NON-RUN STOCKINGS. Non-laddering stockings, etc., made by embroidering. E. Hörler. Brit. P.'s 564 675 and 564 413. According to Brit. P. 564, 675, "knitted articles [are produced] upon embroidering machines, the articles being 'embroidered' on a support which consists of a member which can be detached from the 'embroidered' articles. The support consists of a grating of fine steel wires or strings. After finishing, the garment is easily separated from the support by pulling out the wires or

strings." According to Brit. P. 564 413, "the article is formed by the interlacement of horizontal rows of loops, each single loop, in addition to being interlaced with loops of the neighbouring horizontal row of loops, is also interlaced with both of the lateral loops of the same horizontal row. Formation may be obtained by using an embroidery machine and replacing the frame by wire or string grating."

V, 6. Mechanical processing

RIBBONS. Cut ribbon from Petershams. C. R. Clay and A. M. Heasman (to Charles Clay & Sons, Ltd.). Brit. P. 564 337. By this modification of Brit. P. 544 379, ribbons are made from Petersham fabric by cutting the fabric with a cutter "in which the ridge of the cutter disc is made with its sides at an angle of 35-40° inclusive, meeting with a radius of about 0.004 in. This has been found to give a sealed ribbon edge of better appearance with a fabric woven partly of thermoplastic threads."

V, 7. Products; design; construction

CLOTH DESIGN. Designs for suitings. Backed cloths. L. Bellwood. *Textile Weekly 36,* 354, 356, 358 (August 24, 1945). Constructions are given for three backed cloths for suits. One, which is not named, is said to be developed from the break in a twill with stripes described in *Ibid.,* 317 (August 17, 1045). The others are a fancy herringbone and a three-color fancy Oxford.

FABRIC DESIGN. Fabric ornamentation by special doup weaves. W. Haigh. *Textile Mfr. 71,* 365-7 (September 1945). The method of ornamenting fabrics by use of colored doup threads, which are woven in at angles to the weft, is explained with the help of several pictures of the weaving equipment and the finished cloth, and with a specific example. Dobby looms with a capacity of 24 or more shafts are required.

FIBERGLAS TEXTILES. Fiberglas textiles becoming available for consumer uses. William H. Page. *Rayon Textile Monthly 26,* 478 (September 1945). Fiberglas textiles are being distributed for non-war uses after a four-year period devoted exclusively to military production. The textiles are being sold for draperies, ceiling coverings, or other decorative applications in which they are not subject to repeated flexing or rubbing. Resin-bonded pigment dyes have been used to give "a rather wide range of colors, designs, prints and weaves." It is claimed that research is in progress on making combinations of Fiberglas with rayon, linen, cotton, and silk; and on the use of the products in luggage, awnings, tarpaulins, tents and shelters of all kinds, and other places whether leather or organic fabrics have been relatively unsatisfactory because of oxidation, crazing, cracking, exudation, deterioration, etc.

NAMES OF TEXTILES. What's in a name. C. R. Nodder. *Fibres, Fabrics & Cordage 12,*

362-3 (September 1945). The derivation of names for common types of cloth are given.

RAYON CREPES. American rayon crepes and their construction. Irving Teplitz. *Rayon Textile Monthly 26,* 456-7 (September 1945). Rayon crepes are made from crepe yarns. Viscose yarns are the more easily creped; acetate yarns need special throwing machinery if more than a voile twist is required. Crepes made from acetate yarns have a better hand than those made from viscose yarn. Special effects are obtained by using mixed acetate and viscose yarns, by off-setting one direction of twist by the use of yarn of opposite twist to make flat crepes, by use of multi-filament yarns, etc. Crepes are woven on box looms. It is predicted that high tenacity rayons should be suitable for the production of sheer crepes, and that rayon-nylon combinations should be attractive. Nylon already has been made into a fabric resembling cotton seersucker.

SUITING DESIGN. Fancy woollen and worsted suitings. Crammed line stripes. "Portex". *Wool Record & Textile World 68,* 276-7 (August 16, 1945). Crammed line stripes can be applied to any weave, and they lend themselves to a variety of color and effects since they can be made from mercerized cotton, rayon, and "fibro" threads in wool or worsted ground weaves. Constructions are given for crammed stripes in a 2-and-2 twill suiting, a 3-2-1-2 twill, etc.

SUITING DESIGN. Worsted cloths for export. Homespun type of texture. "Portex". *Wool Record & Textile World 68,* 405-6 (September 6, 1945). Seven examples are given of constructions of worsted suitings for export from England. They are "distinguished by their woollen-style finish and texture and are in striking contrast to the tightly-woven and clear-finished worsted cloths." The examples include a 2-and-2 twill, an overcheck style in a 2-and-2 twill, a herringbone, a broken hopsack weave, and a tweed-style cloth. Botany and cross-bred yarns are employed.

SUITING DESIGN. Saxony suiting tweeds. Quality fabrics for export. "Portex". *Wool Record & Textile World 68,* 448, 450 (September 13, 1945). Constructions of tweeds for export from England, made in stripes, self-colors, and checks from single and double Saxony yarns are discussed with the aid of specific examples. A flannel, a split hopsack weave, and twist or marl effects are among the varieties considered.

SUITING DESIGN. Bird's eye spot effects. Styles for the export trade. "Portex". *Wool Record & Textile World 68,* 489, 491-2 (September 20, 1945). "Some of the most outstanding developments in design and colour and weave effects are to be found in the return to favour of the bird's eye style of pattern featuring small spot effects." This statement prefaces an article giving 12 constructions embodying this effect.

TWEED DESIGN. Fancy coating tweeds for export. The use of "character" yarns. "Portex". *Wool Record Textile World 68,* 320, 323, 325 (August 23, 1945). Tweeds and shepherd plaids with "character" are made by combining nop yarns with plain ground colors. The nop yarns can be used in either the warp or filling, or in both. Among the many suggested constructions, the following may be cited as typical: Warp: 8 skeins fawn with turquoise, petunia, and dark brown nops. Weft: 8 skeins dark blue mixture with gold, saxe, and navy nops. 15 ends and picks per inch; 15/16 oz. per yard. 2-and-2 twill weave. Almost any weave may be used. "Marl features" may be introduced, if desired.

TWEED DESIGN. Colourful check tweeds. Styles for the export trade. "Portex". *Wool Record Textile World 68,* 361, 363, 365 (August 30, 1945). "The check form of pattern . . . providing . . . a means for colour mixing which is unexcelled in the manufacture of fancy woollen fabrics" is discussed with the aid of eight typical constructions.

TWEED DESIGN. Utility homespun tweeds. Colour and weave effects. "Portex". *Wool Record & Textile World 68,* 532, 534 (September 27, 1945). Color and weave effects to be found in homespun tweeds for women's suits are discussed for seven specific cases.

CUSHION MATERIAL. Inventor not named in *Textile J. of Australia 20,* 272 (August 20, 1945). Australian P. 119 924. A fibrous cushioning material for seats, mattresses, etc., is built from two or more units, each composed of a pair of textile fabrics woven in the form of uncut pile so that "legs" of resilient, flexible material are provided between the fabrics. "These legs, because of their length, inclination and resiliency, are capable of holding the fabrics apart and restoring them to such spacing after being compressed. The fibrous material may include protein, cellulosic or synthetic material, and the units may be held in superimposed position by stitching, adhesive or a suitable encasing material."

SWEAT BANDS. British Celanese, Ltd. Brit. P. 564 364. Laminated fabric for sweat bands comprises three layers of fabric bonded by thermoplastic, film-forming material, such as cellulose acetate, contained in the middle layer of fabric. Both outer layers have a water-repellent coating.

THREAD OF VICTORY. Frank L. Walton, Catlin Farish Co., Inc. Fairchild Publishing Co., New York, 1945; 272 pp.; $3.00. This account of the measures adopted by the U. S. Government for conserving textiles, clothing, and leather during the war is written by the man who was the Director of the Division of the War Production Board which controlled these matters. The narrative is enlivened with cartoons and doggerel showing the reactions of the public to style controls, diaper shortages, and the like.

V, 8. Applications: nontextile uses of fabrics

V, 8a. Insulation

FABRIC INSULATION. High strength insulation fabric. D. Finlayson and H. Crawshaw (to British Celanese, Ltd.). Brit. P. 564 192. Fabric suitable for oiling or varnishing for use as an electric insulating fabric comprises in both warp and weft yarns of great tensile strength and low extensibility, and yarns of relatively low strength and high extensibility. These are so woven that the yarns of low extensibility are not interlaced in any great degree with other yarns of the same kind, but depend almost entirely for their maintenance in the structure on the presence of the yarns of high extensibility. When treated with an insulating varnish, it possesses a much higher resistance to tearing than a fabric of similar weight woven from the stronger yarns alone. It is convenient to employ as the stronger yarn, continuous filament yarns of regenerated cellulose of high tenacity and any suitable fine yarn having a relatively high degree of extensibility.

V, 8b. Coated or impregnated products

ELECTRICAL TAPE. Textile tape becomes electrical conductor. Anon. *Textile World 95,* No. 7, 95 (July 1945). Pacific Mills has made a textile tape that can be given electrical resistivities varying from 10,000,000 megohms per square inch for the dry, untreated material up to 16 to 24 megohms per square inch for the most completely treated material. Since the material still is in the experimental stage, its uses have not been explored fully, but it should find use as shielding tape over the more common metal tapes to grade electrostatic flux, to discharge static accumulations, to eliminate corona, etc. The tape will be available in different sorts of surface finish, including finishes resistant to oil and water.

GERMAN RUBBER. German synthetic mechanical goods. I-III. Summary report, August, 1945, of the Rubber Bureau, WPB, and of the Office of the Rubber Reserve, RFC. *India Rubber World 112,* 723-7 (September 1945); *113,* 79-83 (October 1945); and 231-5 (November 1945). A description of the various types of textiles used and their performance is included in a report on German mechanical rubber goods compiled from reports of members of the Rubber Mission, which investigated the German wartime rubber industry. Brief descriptions are given of the various Bunas and the compounding ingredients used; and longer descriptions are given of the methods of manufacture and the performance of V-belts, hose, molded goods, rubber-covered rolls, tank linings, and rubber-plated metals. Numerous formulas are included. Rayon was used wherever possible. The yarn sizes and cloth constructions were approximately the same as had been used with cotton. Although the rayon fabrics were appreciably stronger than the cotton when tested on a dry basis, the loss of strength of rayon in the presence of large amounts of moisture was so great

that manufacturers of finished products did not calculate greater draw bar loads for belts or bursting strength for hose than when cotton had been used. Continuous filament rayon was favored for severe loads and services. Service records on rayon conveyor belts are lacking, but the Germans claimed that cotton belts were better, because of the higher flex life of cotton and its better resistance to moisture. Steam hose was made from cotton. Continuous filament fabrics were predipped in a haemoglobin-latex or a resorcinol-formaldehyde-latex solution (formulas are given for both) to make then adhere to calendered frictions and skims applied to the treated fabric by conventional methods. The same rubber-covered rolls were used for textile and paper mills. The manufacturers had difficulties in building the rolls because of insufficient tack between plies. It is stated that the American technics of fabricating rolls are ahead of the German.

STERILE BANDAGE. Iodine-impregnated fabric. From *Textile J. of Australia 20,* 232 (July 20, 1945). Australian P. 119 771. Fabric for surgical dressings is made as follows: the fabric is immersed in "an aqueous solution of isinglass, preferably containing sugar and glycerin", dried, immersed in a solution of iodine, and dried. The isinglass protects the cloth against the action of iodine, and the sugar and glycerin form a soluble adhesive.

ROLLING ON RAYON. Bulletin of the Industrial Rayon Corp., place of publication not given, 1945; 16 pp.; gratis. The advantages of viscose as a material for tire cord; and the methods used by Industrial Rayon Corp. in making the rayon yarn, cord, and fabric are discussed with the aid of pictures.

VI. FINISHING

FINISHING HOSIERY. Centralized finishing of hosiery. Julian W. Hughes. *Cotton (U. S.) 109,* No. 9, 163-4, 166, 169 (September 1945). Hosiery mills are advised to sell their goods in the grey to centralized finishing plants, which dye and finish the hose, and sell them under their own brand name. The finishing department of a small or medium-sized knitting mill is relatively expensive to run; commission finishing often leads to friction between the two mills. The existence of large, centralized, finishing plants might lead to the establishment of small, cheaply-run grey mills making only one or two sizes of hose in only one style. These small mills probably would have little labor trouble. The construction, equipment, and staffing of the centralized finishing plants; and the marketing of the finished hose are discussed at some length.

ROLE OF CONVERTERS. Position of the converter in transition merchandising. Arthur Fluegelman, N. Fluegelman & Co., Inc. *Textile Colorist Converter 67,* No. 9, 22-3 (September 1945). Because the converter has a definite role to play in setting as well as in rapidly following changes in styles,

and in distributing relatively small lots of goods, "the reputable converter will become even more important and . . . the entire textile market will increasingly recognize his position as a vital cog in the creative and distributing picture". These things are expected even in the face of strong competition from integrated mills selling directly to manufacturers or retailers.

TEXTILE AIDES. New lubricants aid oiling and wet finishing woolens and worsteds. Wallace F. Heintz, E. I. du Pont de Nemours & Co. *Textile World 95,* No. 7, 101, 176, 178, 180 (July 1945). In a speech before the Providence Section of the American Association of Textile Chemists and Colorists, the author cites experiments made on a wide variety of woolen and worsted yarns and cloths, using "Avitone" for oiling, wet finishing, fulling, and scouring. Avitones are sulfonated hydrocarbons. Lubricant put on the yarn is carried into wet finishing. Avitones possess the advantages over soap and alkali of rinsing out rapidly, of being neutral, of being efficient in very small amounts (2 to 2.5% on the weight of the stock for clean, scoured wool to be carded and spun), and of giving products superior in some ways to those made by conventional processes.

VI, 1. Preparation

VI, 1a. Boiling and scouring

SCOURING COTTON. Steam processing scours cotton continuously. P. J. Ariente, Sayles Finishing Plants, Inc. *Textile World 95,* No. 7, 94-5 (July 1945). A horizontal, conveyor-type steamer for scouring and bleaching cloth in open width is described and diagrammed. The steamer was developed by The Mathieson Alkali Works. Goods to be scoured are impregnated in a hot padder with a solution containing 6.5% caustic soda, 0.5% synthetic detergent, 0.1% penetrant, and 0.25% Textone. They are then passed through rolls which remove the surplus liquid, and then into the steam chamber. The scouring time is 45 minutes, or less, and 4000 to 6000 yards per hour can be processed. For bleaching, the solution in the padder contains 2% acetic acid, 0.25% Textone, and 0.5% synthetic detergent.

VI, 1d. Drying and conditioning

INDUCTION HEATING. Role of automatic rematching in high-frequency heating. Eugene Mittelmann, Illinois Tool Works. *Elec. World 124,* No. 5, 98-100 (August 4, 1945). Power-temperature relationships during an induction heating cycle are discussed to bring out that changes in permeability of the charge, e. g. during drying, affect the power absorption. These changes should be counteracted, so that the power demand is constant, by means of continuous, automatic rematching of the high-frequency generator to the varying impedance of the load. Such rematching permits the use of smaller generators and the application of induction heating in high temperature regions (1400-2300°F.).

INDUCTION HEATING. Dielectric heating fundamentals. Douglas Venable, Westinghouse Electric Corp. *Electronics 18,* No. 11, 120-4 (November 1945). "To utilize industrial dielectric heating efficiently, the basic theory of the technique must be considered. Power requirements, thermal losses, characteristics of the load, and types of networks for matching the load to the oscillator are discussed."

INDUCTION HEATING. Vacuum-tube radio-frequency-generator characteristics and application to induction-heating problems. T. P. Kinn, Westinghouse Electric Corp. *Proc. Institute Radio Engineers 33,* 640-57 (October 1945). "Induction heating at radio frequencies is rapidly taking its place in many industrial processes . . . The fundamentals of the vacuum-tube self-excited oscillator and design considerations which determine the characteristics of the radio-frequency generator are reviewed and illustrated. In general, the characteristics show a high-impedance, constant-current, variable-voltage generator which requires manipulation of load circuits to load the generator properly. Methods are illustrated for accomplishing proper loading, and numerical examples are given illustrating the formulas and procedures necessary to any induction-heating problems."

VI, 3. Milling and fulling

MILLING. The milling process. Theory and practice. "A Correspondent". *Wool Record & Textile World 68,* 408, 410, 412 (September 1945). D. R. H. Williams' theories of what happens in milling (*Ibid.,* 237, 239, 241, 243 (August 9, 1945), *cf. TTD 2,* 456 (October 1945)) are criticized point by point, and doubt is expressed about the practicability of Williams' new milling machine. It is stated also that pH control during milling is even more important than temperature control. Williams' reply, p. 452 (September 13, 1945) passes over the criticism of his theories with the statement, "I am chiefly concerned with results and not theories . . .", but contains an invitation to his critic to come and see his milling machine.

VI, 6. Sizing and finishing

COATING EQUIPMENT. Equipment for treating paper or paperboard with resins. Coating processes and equipment. Frank W. Egan, John Waldron Corp. *Paper Trade J. 121,* TAPPI 137-40 (October 4, 1945) and TAPPI 163-8 (October 25, 1945). Equipment for treating paper or paperboard with resins by the dip and flow, the absorption, the pressure impregnation, the saturation, and the heat processes is described, diagrammed, and evaluated briefly. Similar information is given for the ten basic methods of coating paper: dip, knife, cast, roll, brush, air brush, spray, print, extrusion, and strip.

DRY PROCESSING. Machines for dry processing. "Chemitex". *Textile Recorder 63,* No. 751, 49-51, 63 (September 1945) and No. 752, 46-9 (October 1945). Descriptions, photographs, and

diagrams are given of 34 of the following types of machinery used in the dry processing of textiles: conditioning machinery, mangles, belt-stretching machines, calenders, beetling machine, tamponing machine, softening machines, napping and other raising machines, brushing machines, presses, and creasing and plaiting machines.

RESIN FINISHES. Use of synthetic resins in textiles. L. J. Sheps, Onyx Oil and Chemical Co., Ltd. *Can. Textile J. 62,* No. 18, 38-9, 54, 56, 58 (September 7, 1945). Application of resins to the finishing of fibers dates from 1928, when wrinkle-proofing of fabrics was announced. They may be put on as surface coatings or as emulsions which impregnate the fabric, but they are best applied as ingredients of the resin or as a low polymer, which are developed in place in the fabric. The resins used, the preferred conditions of application, and the properties of the treated fabrics are discussed fairly fully. 31 references to patents and literature are cited.

RESIN FINISHES. Two standard methods for curing resin finishes. John W. Reinhardt, Proctor and Schwartz, Inc. *Rayon Textile Monthly 26,* 459-60 (September 1945). Cloths impregnated with resins can be cured in equipment based on the loop- and on the roller-type driers used for a long time in the textile industry. The curers differ from the driers in that the temperature and the circulation of air are controlled much more carefully. Temperatures ranging from 300 to 450°F. are secured with high pressure steam or gas heating. The particular temperature chosen depends on the nature of the fabric, the operating speed of the curer, and the nature of the resin. Cottons, rayons, and woolens can be cured equally well in either machine, but marquisettes and laces have to be handled in the roller curer.

UREA DERIVATIVES. Urea derivatives instead of urea for textile treatment. I. [Guanidine salts.] Anon. *Silk & Rayon 19,* 922-3, 998, 1000 (September 1945). A review of recent British patents on guanidine, aminoguanidine, and biguanidine salts for treating textiles contains information on the chemistry of these compounds as well as directions for their use in modifying the handle and dyeing properties of rayon and wool, in softening water, and in levelling and stripping dyes.

WRINKLE FINISH. Wrinkle finish for flexible materials. Anon. *Chem. & Met. 52,* No. 9, 142 (October 1945). A wrinkle finish for cloth, felt, paper, and metals has been developed by New Wrinkle, Inc., Dayton, Ohio. The composition has a synthetic resin base; and is applied by spraying, spreading, or rolling.

VII. COLOR

BRINE CALCULATIONS. "Lixate equivalent method" speeds brine calculations. Dale W. Kaufman, International Salt Co., Inc. *Cotton (U. S.) 109,* No. 9, 110-12, 114 (September 1945). "A new and rapid method for making brine calculations . . . called the 'Lixate Equivalent Method' uses the Salometer degree and the gallon of fully-saturated brine as units of measurement. Weights are eliminated from the calculations, and brine strength is stated in terms of volume." This method is explained and illustrated with numerous typical examples of "diluting, strengthening, and mixing brine". A table for use in these calculations is given on p. 112.

TEXTILE ASSISTANT. Phosphorus compounds in the textile industry. I. Dyeing and bleaching uses of ortho-phosphoric acid. II. Versatility of the phosphates in properties and uses. Anon. *Dyer & Textile Printer 94,* 217-8 (September 14, 1945) and 265-9 (September 28, 1945). A review of the uses of ortho-phosphoric acid and of various phosphates and some less common compounds of phosphorus in the textile industry contains information on their general properties as well as specific formulas for bleaches, weighting solutions, etc., containing them. Ortho-phosphoric acid can replace to advantage formic or acetic acid in the dyeing of wool with acid and chrome dyes. It can be used also in the carbonizing, acid milling, chlorination, and stripping of woolens. Mixed with its salts it forms a buffer to stabilize hydrogen peroxide solutions for bleaching various textiles or for "woollenizing" jute. Primary sodium phosphate is used comparatively little, and that for neutralizing alkalies or for forming buffer solutions. Secondary sodium phosphate and sodium pyrophosphate are used to stabilize hydrogen peroxide bleaches; secondary sodium phosphate, trisodium phosphate, sodium pyrophosphate, and sodium hexametaphosphate are used for scouring, certain kiering operations, and as assistants in dyeing and finishing; secondary sodium phosphate, phosphotungstic and tin acid phosphates are used in weighting silk; trisodium phosphate and sodium pyrophosphate are used in softening water, and the latter is a remarkable emulsifying agent. Phosphotungstic acid assists in the pigment-printing of cellulose fabrics; ethyl ammonium phosphate is a humectant and flame-proofing agent; mono- and diammonium phosphates and sodium borophosphate are fire-retardants; some organic compounds of phosphorus, e. g. quaternary phosphonium compounds, are mothproofing agents, and certain others prevent attack by mildew and other insects; and sodium cetyl alcohol borosulphosphate is used for boiling-off and finishing hosiery.

VII, 1. Bleaching

BLEACHING SCORCHES. Sunlamp whitens scorched spots in white shirts. Anon. *Rayon Textile Monthly 26,* 451 (September 1945). Lightly scorched places on shirts can be removed by dampening them and exposing them for about ten minutes to the action of long ultraviolet rays from a lamp developed by Eugene W. Beggs and Allen Dusault of Westinghouse Electric and Manufacturing Co. The radiation makes the fibers take back the moisture removed in scorching.

STAIN REMOVAL. Stains on textiles and best removal. Anon. *Rayon Textile Monthly 26,* 486 (September 1945). Methods of removing 22 common stains from washable and non-washable materials are outlined.

VII, 2. Dyeing

DYEING RAYON. Synthetic fibres. A special supplement dealing with the dyeing of viscose, acetate, cuprammonium and other synthetic fibres. Anon. *Dyer & Textile Printer 94,* 239, 241 (September 14, 1945). The theory put forward by Meitner (*J. Society Dyers Colourists 61,* 33 (1945)) to explain the dyeing of viscose rayon with wool dyes is utilized to explain the known effect of salts in deepening the shade of cotton or viscose rayon. According to this extension of Meitner's views, the particles of dye in the dyebath break up to some extent into smaller particles, and these smaller particles enter the fibers to reaggregate there into particles too large to get back out; when salt is added to the dyebath, the equilibrium between aggregated and less aggregated dye particles in the dyebath is disturbed so that more small particles are formed, and these crowd into the fibers to intensify the shade.

DYEING WOOL. Influence of pH and grease residue of wool and mohair in relation to dyeing. Arthur N. Patterson, S. Stroock and Co., Inc. *Rayon Textile Monthly 26,* 475-6 (September 1945). Australian wool, pH 7, and pulled South American wool, pH 4.5, were subjected to parallel dyeing to show that the pulled wool dyes too rapidly for best results, although in the end it takes up no more dye than the Australian wool. Mohair dyed as received in the bale and mohair rescoured to lower the grease content from 2.1 to 0.21% dye quite differently, the latter exhausting the bath to a much greater extent. Therefore, the dyer should know the pH and grease content of wool and mohair fibers before he attempts to dye them.

HEXAGONAL ROLLS. "Hex" shaped steel rolls promoted by Rodney Hunt. Anon. *Textile Bull. 69,* No. 2, 40 (September 15, 1945). Stainless steel rolls with hexagonal cross-sections are stated by the Rodney Hunt Machine Co., Orange, Mass., to have the following advantages for use in dye kettles over those with round cross-sections: they are stronger, last longer regardless of the method by which they are driven, have greater pulling power on many types of fabrics, and continually shake and open the fabrics.

HISTORY OF DYES. The origin of modern dyestuffs. Paul L. Oertel, Allied Chemical & Dye Corp. *Rayon Textile Monthly 26,* 293-5 (June 1945). The development of synthetic dyes in the nineteenth century is traced. Aurin, picric acid, Roman purple, mauve, alizarin, indigo, and halogenated indigos were synthesized and their manufacture was put on a commercial scale during that period.

WARP-DYEING JUTE. Dyeing jute in warp form. I-III. Anon. *Dyer & Textile Printer 94,* 263-5 (September 28, 1945), 303-4 (October 12, 1945), and 343-4 (October 26, 1945). Directions are given for dyeing of jute warps in beam-dyeing and multi-box machines, and in becks. Each method is said to have its advantages. Beam dyeing rarely breaks or frays warp strands, the color produced is level, and the duration of the dyeing process can be "extended at the pleasure of the dyer". Dyeing of jute in rope-form by passing it through multi-box machinery is preferred by some because the output is greater. The points at which trouble is apt to arise in each process are mentioned.

DIFFERENTIAL DYEING. Differential dyeing of fabrics. E. M. Whittaker, H. A. Thomas, C. C. Wilcock, and C. P. Tattersfield (to Courtaulds Ltd.). Brit. P. 564 131. Differential color effects are produced on fabrics by impregnating them with a solution of a non-volatile dye or resin, forming compounds which alter the dyeing properties of the material. The dyes and the resin-forming compounds have low affinity for the cloth. The impregnating material is then evaporated more rapidly from one portion of the fabric than from the remaining portions. Fabrics treated with resin-forming compounds are then heated and dyed to produce the differences in color. In one example, an impregnating solution is prepared by dissolving one part of Chlorazol Fast Orange AG in 100 parts of water. A fabric made from "Fibro" is padded in this cold solution and squeezed until it retains its own weight of liquor. A hot air blast is then directed on one side of the fabric until it is thoroughly dried. The side on which the hot air has impinged is darker than the other side.

VII, 2d. Printing

FAULTY PRINTING. Specky effects in textile printing. "Technicus". *Textile Mfr. 71,* 390-1 (September 1945). Specks of color in printed fabrics can be caused by the use of dye solutions or pastes containing undissolved or imperfectly dispersed dye, or by local precipitation of dye that has been dissolved. Typical examples are given of all three, and methods of avoiding the difficulties are described briefly.

LUMINESCENT FABRICS. Application of luminescent pigments to textiles—and their uses. M. A. Heikkila, New Jersey Zinc Co. *Rayon Textile Monthly 26,* 477-8 (September 1945). Phosphorescent and luminescent pigments can be made into printing inks and pastes for printing textiles. They cannot be subject to too much mechanical work since their luminescent properties depend on their crystal structure. The binders or carriers should be clear. Generally, mixture with non-luminous pigments should be avoided to prevent loss in brightness, but the daylight colors may be modified by inclusion of very small amounts of suitable dyes. Designs may be printed with one or more luminescent colors, or a

combination of luminescent and non-luminescent colors. In the latter case the non-luminescent part of the design appears black in the dark.

PRINTING AIDE. Gum tragancanth in textile printing. "Technicus". *Textile Recorder 63,* No. 750, 52-3 (September 1945). Gum tragnancanth in aqueous media is one of the best thickeners for use in printing textiles. It has greater thickening power than almost any other agent, except the locust bean thickeners; it is easily removed with cold water after use; it resists alkali encountered in vat-dyestuff printing and in printing with stabilized azo dyes; it is miscible with almost any other thickener made from starch or starch derivatives; it stays in suspension when in contact with finely divided pigments, e. g. in printing pastes; it keeps well; it penetrates well; and it gives a high color yield. Directions are given for preparing gum tragancanth suspensions and for using the suspensions alone or mixed with starch suspensions for the production of special effects.

PRINTING FELT. The stencil printing of felt mats. Clear and coloured discharge styles. Anon. *Dyer & Textile Printer 94,* 341-2 (October 26, 1945) and 383-4 (November 9, 1945). Specific directions are given in Part I for stencil-printing clear and discharge colors on felt mats made from cows' or goats' hair. The mats are used as small throw-rugs for bedrooms. In Part II directions are given for stencil-printing with direct cotton dyes and pigment colors.

PRINTING SYNTHETICS. Synthetic fibres. A special supplement dealing with the dyeing of viscose, acetate, cuprammonium and other synthetic fibres. A dyer's notes. Anon. *Dyer & Textile Printer 94,* 319-21 (October 12, 1945). Knitted acetate rayon for underwear can be printed in small patterns by laying the cloth on a printing table, covering it with a cardboard or zinc-sheet stencil, and spraying from a spray gun a methyl alcohol solution of the first dye. The stencil is changed and the second color applied in a similar manner. A third color may be put on, if desired. The patterns so applied do not wash out, apparently because the methyl alcohol gelatinizes the acetate rayon, and the pigment or dye enters the softened fibers and is bound there when they re-set as the alcohol evaporates. Possibly viscose rayon knitwear can be printed if some gelatinizing agent is added to the dye, or possibly the Aridye process will work, but as far as the author's personal experience goes with viscose rayon "colour fixation is so bad that the printed pattern is removed by one or two mild washes."

TEXTILE PRINTING. Internat'l Textiles 1945, No. 8, 72, A-H. Photographs illustrate the methods of preparing and using blocks for printing textiles, and the results produced.

WASHING PRINTING BLANKETS. Dewey & Almy Chemical Co. Brit. P. 564 565. Apparatus for washing printing blankets has two washing stations in the run and a drier for the blanket. A color-transfer roll removes color from the surface of the blanket, and means for removing color from the transfer roll are provided. Brushes scrub the blanket surface, and apparatus supplies and maintains a sheet of water on the blanket during its run to the second washing station.

VIII. PROOFING

CELLULOSE FINISHES. New developments in permanent cellulose finishes. D. M. Martin. *Textile Recorder 63,* No. 750, 59, 61 (September 1945) and No. 751, 60, 63 (October 1945). A brief review (without references) of methods of producing permanent cellulose finishes on fabrics emphasizes the advantages of catalytically activated caustic solutions of cellulose. These last solutions can be applied to any textile. Their use on mosquito netting, warp knit and lace fabrics, organdies and rayon, shirting and cotton dress goods, and cotton and rayon pile fabrics is discussed at some length. The summary reads, "C [atalytically] a [ctivated] c [austic] cellulose solution can produce practically any permanent finish effect desired, except crease-proofing. It has no known latent defects, and is not chlorine absorbtive. It is reasonably foolproof in its application and handling. No curing or special equipment is required. It is extremely economical to use. Its use tends to lower overall finishing costs, and increased yardage yields more than offset its slight cost. Permanent cellulose finishes should lead the field, in the post-war period, in the finishing of textile fabrics."

VIII, 1. Waterproofing; weatherproofing; moistureproofing

PLASTIC COATINGS. Plastics technology. The processing of plastic coatings for fabrics. E. G. Hamway, Texileather Corp. *India Rubber World 112,* 743-4 (September 1945). Since 1942 waterproof fabrics have been made for the Army and Navy by coating cloth with vinyl resins. The resins are compounded with plasticizers, pigments, fillers, stabilizers, and lubricants; and they are applied from emulsions or solutions by dipping or spreading, or in the absence of solvent by calendering. Polyvinyl butyral coatings are less able to resist flexing than coatings made from polyvinyl chloride and vinyl copolymers, so even though they can be calendered on conventional rubber equipment, while the others require calender temperatures of 290-340° F., they are less preferred. Factors to be considered in calendering are discussed at some length. It is pointed out that films deposited from emulsions in water or organic non-solvents must be fused to the cloth by heating it to 350-60°.

PLASTIC COATINGS. Postwar uses for polyvinyl butyral. D. S. Plumb, Monsanto Chemical Co. *India Rubber World 112,* 744-5 (September 1945). Polyvinyl butyral coatings for fabrics can be applied with conventional equipment for applying rubber coatings, but its use demands "plant

cleanliness" and it is more expensive than rubber and pyroxylin, so that "particular pains" must be taken "to employ its unique properties". These unique properties are: transparency, flexibility, 'hand', ability to stick to fabrics that are hard to coat with other materials (glass, rayon, Fortisan, nylon, and high count cottons), and ability to be embossed and polished. "In the rainwear field the opportunities for styling a waterproof garment will be a strong weapon against the encroachment of the water repellent fabrics." Tablecloths and napkins, fine upholstery, handbags, and patent leathers are suggested outlets for cloth coated with polyvinyl butyral.

WATER-REPELLENT FABRICS. Watertight fabrics made by swelling cotton fibers. Charles F. Goldthwait and Herbert O. Smith, Southern Regional Research Laboratory, U. S. Department of Agriculture. *Textile World 95,* No. 7, 105, 107, 196, 198 (July 1945). Cotton fabrics resistant to the passage of water, for use in fire hose, tents, and rain clothing, can be made by weaving in a sufficiently dense structure (oxford weave) low twist cotton yarns treated with 6 to 7% of their weight of "the hydroxy ethyl ether of cellulose." These yarns swell when wet to close up the interstices in the cloth. To reduce their extensibility, and so increase their usefulness in fabrics repelling water, the yarns should be stretched when wet, and set. Yarn mercerized under high tension (the Shirley Institute process) is excellent for fire hose, "but it is questionable whether the added expense of mercerization is justified by a corresponding advantage in practical results when a suitable swellable finish is used". Swelling agents not only make the yarns swell when wet, but act as adhesives to hold the fibers together; make the yarn compress more easily so that it beats up better and stays in place when woven; allow the use of low twist, relatively non-extensible yarns; enable the yarn to retain its strength on wetting; and cause the fabric to wet readily in comparison with untreated gray cotton. These swelling agents are not nearly so effective when they are applied to the woven fabrics.

VIII, 2. Insectproofing

MOTHS. Moths won't eat rayon, but—. National Association of Dyers & Cleaners. *Rayon Textile Monthly 26,* 465 (September 1945). Manufacturers of textiles containing rayon and other fibers mixed with wool are warned that moths eat wool wherever it is found. The protection of woolens and furs from moths is discussed, but only briefly.

VIII, 3. Proofing against microbiological attack

MILDEWPROOFING. Mildewproofing agent. Anon. *Chem. Industries 57,* No. 1, 105 (July 1945). "An organo-mercuric compound patented by Sowa Chemical Co. is said to impart bacteriostatic and fungistatic properties to textiles, paper, leather, etc., in very low concentrations. The compound is [said to be] stable and does not react adversely with the treated material. Essentially a mercurated benzyldimethylamine, it is 2-hydroxy-3-dimethylaminomethyl-5-amylphenyl mercuri-acetate."

MILDEWPROOFING. Mildewproofing of cellulosic fibers. Hector C. Borghetty, General Dyestuff Corp. *Rayon Textile Monthly 26,* 141-3 (Sept. 1945). Mildewproofing of cloth was required in England for sandbags and in the United States for uniforms and equipment to be used in the tropics. It was found that mildewproofing "can be accomplished by the use of appropriate products at all stages of textile processing and on regular plant equipment". Of all the agents tested, Copapel A is recommended for permanency where feel and color are unimportant; Puratized LN and Preventol GD are recommended as semi-permanent types answering most of the present government specifications for most uses where feel, color, and non-toxicity are important; Puratized N5-D is recommended as a semi-permanent type for ease of application, particularly along with water repellents; and Puratized PC is recommended as a semi-permanent type for use with alkali-soluble cellulose finishes like Celfon. The chemical structure of each of these trade-marked products is given. Other types of mildewproofing agents are touched on. Conditions for mill runs are given as follows: Impregnation of OD vat-dyed, 8 oz. duck for stretchers with Preventol GD; impregnation of OD vat-dyed, 15 oz. duck with Preventol GD; simultaneous impregnation of mosquito netting with Preventol GD and permanent alkali-soluble cellulose finish (Celfon H); impregnation of tenting fabric (8 oz. cotton duck) with Ramasit A containing Preventol; impregnation of 1-in. cotton webbing with Puratized LN in Ramadux NR; etc.

VIII, 4. Flameproofing

FLAMEPROOFING. "Flame-damping" process. C. Hobday (to The Geigy Colour Co., Ltd.). Brit. P. 564 573. Textiles are rendered flame-resistant by incorporation of a water-soluble condensation product (made by reacting, in the presence of an alcohol, a nitrogen compound containing a 5- or 6-membered heterocyclic ring, in which the grouping

$$-N{=}C-NHX$$

is present at least twice, X being hydrogen or a primary amino group, and the atoms connected by the double bond form part of the heterocyclic ring) with an aldehyde, and of at least an equal weight of a non-inflammable plasticizer, followed by heating.

VIII, 5. Creaseproofing

CREASEPROOFING. Americans praise British crease-resist finishes. Anon. *Daily News Record;* taken from *Dyer & Textile Printer 94,* 325 (October 12, 1945). "Factors of mechanical routing, process time and temperatures as well as tentering equipment, are responsible for the superiority of British crease-resistant finishes over their

American counterparts, it was stated by Arthur Wachter, head of the Crown Tested Department of American Viscose Corp., who just returned ... from England ... Based on their observations abroad, Mr. Wachter said that in the American finishing methods the chemicals were right as well as the polymerization of the resins but that the mechanical routing was wrong. Specifically ... [he] was impressed by the use of pin tenters ... in England. Through the use of these tenter frames ... it is possible to overfeed the goods by 10 to 15 per cent. This slackness permits the moisture to stay in the yarn instead of being squeezed to the surface. This causes the resin on setting to be dispersed through the yarn instead of being concentrated on the surface ... Drying methods in England also contribute to better crush-resistant fabrics where the drying ... is done at 40 to 60 yards a minute ... [and at not] over 200 deg. F. ... In soaping the fabrics after curing, the time used in England was much longer than here ..." The John Dalglish Iron Works in Glasgow is making a pin tenter "with a quite remarkable entirely automatic hydraulic feed". "The British are well ahead of this country in the package dyeing of rayon yarn."

VIII, 6. Shrinkproofing

SHRINKPROOF WOOL. Selling the public washable wools. Richard E. Sumner, American Cyanamid Co. *Textile Colorist Converter 67,* No. 9, 16-17 (September 1945). In order to sell wool made shrinkproof with Lanaset resin, the American Cyanamid Co. is having put on each garment a label to which is attached a swatch of fabric which has been washed five times. The label states that the garment will not shrink more than 5% in either length or width, when washed in accordance with the directions furnished, although on all the washing tests made by the company in domestic and commercial washers the shrinkage has been lower than 5%. "American Cyanamid believes that this conservatism in presenting Lanaset to the public will pay dividends in the end ... No chances are being taken of impairing consumer confidence in this new fabric treatment."

SHRINKPROOFING. Shrinkage — what we are doing about it. Donald H. Powers, Monsanto Chemical Co. *Textile Bull. 69,* No. 2, 19-20, 44-5 (September 15, 1945). "The stretch applied in weaving and finishing textile fabrics of all types shows up as shrinkage during washing or dry cleaning unless it is removed mechanically, chemically, or with resins. Sanforizing and sponging are the most important mechanical processes, which allow the fabrics to relax when damp as the final finishing operation. Chemical methods make the rayons and wool behave much more like cotton in their shrinkage characteristics. Resins deposited either in or on the fiber can be used to stablize and fix the fabric in the stretched condition or reduce its tendency to shrink 60 to 80 per cent. In the case of

wool, resins both reduce relaxation losses and greatly reduce the tendency to felt, making them washable." Of the resins available, the melamine resins are to be preferred for their light color, effectiveness in small concentrations, and low affinity for chlorine.

IX. TESTING AND ANALYSIS

U. S. TESTING CO. History of a great American laboratory. Anon. *Rayon Textile Monthly 26,* 443-7 (September 1945). The growth of the United States Testing Company is traced from the founding of the New York Silk and Wool Conditioning Works in October, 1880, which was incorporated as the United States Silk Conditioning Co., in 1908, was absorbed in 1909 by the Testing Co., and became successively the United States Conditioning and Testing Co., Inc., in 1910 and the United States Testing Co., Inc., in 1920. The original operations were concerned with silk. In 1908 the company was designated as the official testing house of the Silk Association of America. Gradually the testing facilities and services expanded to include all textiles, furs, leathers, paper, chemicals, lubricants, fuels, soap, water, etc. Bulk testing and salvaging of damaged goods are among the other lines undertaken by the company. The United States Testing Company supervised the establishment of silk-testing laboratories in China and Japan, and has installed and staffed laboratories for testing consumer goods in many department stores in the United States. Illustrations show the main laboratory at Hoboken, N. J., Mr. D. E. Douty, the president, and a section of one of the chemical laboratories.

WEARING PROPERTIES. Wear resistance of apparel textiles: a literature survey. Harry S. Hall and Ernest R. Kaswell, Fabric Research Laboratories, Inc. *Textile Research J. 15,* 178-89 (May 1945). A survey of the literature, chiefly since 1931, on the wear, resistance to wear, and factors affecting wear of textiles for clothing contains abstracts of 84 articles found in 11 English-language journals.

IX, 1. Physical and Mechanical

ELECTRON MICROSCOPE. D. G. Drummond. *J. Textile Institute 36,* P131-42 (September 1945). A paper before the Lancashire Section of the Textile Institute contains a long explanation of the theory underlying the electron microscope, and is illustrated by pictures of the R. C. A. Type B electron microscope in use at The Shirley Institute and with electron photomicrographs of dye particles, dust particles from the air of a card room, a microorganism found associated with cellulose, cotton pulped in a paper beater, a particle of foreign fiber found in wet pulped cotton, a film of Polythene, and a stripping from a rubber surface showing embedded carbon black. The bibliography contains

38 references. Thus far the applications of the electron microscope to problems of the textile industry are limited by the fact that the specimens have to be thinner than they can be made by ordinary technics.

ELECTRONIC EQUIPMENT. The electronics buyers' guide. First postwar directory of electronic and allied products. Anon. *Electronics 18,* No. 11, 173-236 (November 1945).

MOISTURE PERMEABILITY. Instrumentation studies. LI. Penetration of papers by water vapor. V. Methods of measuring vapor and gas permeability—a bibliographical study. Staff of the Institute of Paper Chemistry. *Paper Trade J. 121,* No. 13, 68, 74, 78, 80, 86, 91 (September 27, 1945); No. 16, TAPPI 151-60 (October 18, 1945). An annotated bibliography on methods of measuring permeability of materials to vapors and gases contains information on the measurements on paper, fabrics, leather, films of plastics, etc.

QUALITY CONTROL. Statistical methods in quality control. V. Variations to be expected in sampling. American Institute of Electrical Engineers, Subcommittee on Educational Activities. *Elec. Eng. 64,* 363-4 (October 1945). An example is used to explain briefly the chance variations to be expected in observed averages, standard deviations, etc., when the equality of a product is measured by taking samples.

MICROSCOPICAL TECHNIQUES FOR THE STUDY OF DYEING. George L. Royer, Charles Maresh, and Anna M. Harding, Technical Bulletin No. 770, Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J., 1945; 41 pp.; gratis. Techniques used at Calco for the microscopic examination of textiles are described at some length, with the aid of diagrams and photographs of the equipment, and photomicrographs in color of cross-sections of dyed textile fibers and leathers, and of crystals of dyes. The techniques covered are those for making cross-sections; photomicrographs in black-and-white and in color, with ordinary, polarized, and fluorescent light; and "optical stains". This bulletin is the source of an article called "The Microscope—Increasingly Useful for Textile Work" by C. W. Bendigo, Executive Editor, *Textile World,* in *Textile World 95,* No. 7, 97-9 (July 1945).

IX, 1a. Fibers

GRADING LINTERS. Estimation of foreign matter content of cellulose fibres. Anon. *Fibres 6,* 43-4 (July 1945). Linters can be graded objectively by the following reproducible and reliable method: a 20-g. representative sample is prepared "by means of a mechanical lint mixer, as described in N. C. P. A., rule *272,* section 1". A porous earthenware vessel is impregnated with 2.5 cc. concentrated hydrochloric acid and after the acid is completely absorbed by the walls and bottom of the vessel, the linters are placed in the vessel, and heated to 115°C. for one hour in an oven with the lid on and a half hour with it off. This treatment makes the lint friable. The treated lint is forced through a coarse sieve of about 8 mesh. The lint and any material left on the 8-mesh sieve are transferred to a 50-mesh sieve and brushed through with a 2-inch varnish brush, using a circular motion and frequent tapping. Lint passes through the 50-mesh sieve, and the foreign matter left behind can be weighed and subjected to a regular sieve analysis. Sample analysis showed that a lint of good quality contained 1.25% foreign matter, a poor lint contained 2.80% foreign matter, and an unsatisfactory lint contained 4.35% foreign matter. Disadvantages of the method are pointed out: the acid and friction slightly reduce the size of the particles of foreign material, the leaf and shreds of stems disintegrate and are not recovered fully, corrections are not made for variations in moisture, and only foreign material coarser than 50 mesh is recovered. These objections are stated to be "not very serious [for] the practical manufacturer".

IX, 1c. Fabrics; foils; films

ABRASION. Mechanics of abrasion of textile materials. Walter J. Hamburger, Fabric Research Laboratories, Inc. *Textile Research J. 15,* 169-77 (May 1945). "A method is described for predicting the inherent abrasion resistance of textile materials substantively by the use of load-elongation diagrams of mechanically conditioned specimens. Immediate and delayed deflections are discussed as they affect energy coefficient *E.* This coefficient is shown to be a function of: (1) low modulus of elasticity; (2) large immediate elastic deflection; (3) high ratio of primary to secondary creep; (4) high magnitude of primary creep; and (5) high rate of primary creep. Nylon shrunk, nylon unshrunk, acetate, and viscose yarns are evaluated on the Taber Abraser, and from rate-of-destruction curves durability coefficients *D* are obtained. Correlation is shown to exist between durability coefficients and energy coefficients for the four yarns."

HEAT TRANSMISSION. The transmission of heat through textile fabrics. II. F. T. Peirce and W. H. Rees, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 314-64 (September 1945). The transmission of heat through relatively thick fabrics of the types which might be predicted suitable for Arctic usage was measured in a calorimeter, which is described, and is reported in "togs" (1 tog is the resistance that maintains a temperature difference of 0.1°C. with a flux of 1 watt per square meter) the thermally effective specific volume (T. E. S. V., or the ratio of the equivalent air thickness to the weight per unit area), and the specific thermal resistivity (the ratio of the thermally effective specific volume to the actual specific volume). The measurements

were made in air moving at a velocity of about 100 cm. per sec. The effect of wind was assessed by measuring the rate of cooling of a cylinder filled with warm water and covered with fabric when exposed to air moving at 7 m. per sec. "The thermal resistance really derives from that of the air immobilised in the fabric." All other things being equal, the resistance of fabrics of given construction and composition depends on their thickness. Even in very thick fabrics, there is "very little indication of any serious influence of the true fibre conductivity on the thermal resistance . . . The fibre effect is rather due to mechanical properties which affect the loftiness of the structure. Some fibres more easily produce a thick light fabric or fleece than others . . . Observations on fleeces show that much higher T. E. S. V. values are obtained by using fibers in this form than by any woven construction . . ." "The value of a windproof garment in a cold wind seems incontrovertible."

TESTING TEXTILES. U. S. testing and research. Woven dress fabrics and hosiery. Anon. *Textile Mfr. 71,* 191-2 (May 1945). Tests developed by the National Bureau of Standards (U. S.) for determining yarn slippage in fabrics, and the strength of stockings and their resistance to abrasion are mentioned, but not described in any detail, since they are embodied in commercial standards. Illustrations show equipment used for testing tensile strength, abrasion resistance, strength and elasticity of knitted fabrics, and designs developed by the Bureau of Home Economics for cotton-mesh hose.

IX, 2. Chemical

GREASE-WOOL ANALYSIS. The analysis of grease wool for clean content. George C. LeCompte, Mayne R. Coe, and Betty L. Gold. *Am. Dyestuff Reptr. 34,* 383-4 (September 24, 1945). Improperly scoured grease wools are shown to analyze too high for clean wool content. Samples for analysis should be subjected to successive rescourings of one minute each at 120°F. in a solution containing 0.5% sodium carbonate and 0.05% detergent, using a liquor to wool ratio of 50:1. The samples are ready for analysis when they lose no weight between two successive scourings.

IX, 2d. Textile chemicals and dyes

COPPER NAPHTHENATE. Determination of copper in copper naphthenate. A. A. McLeod (Macdonald & Macdonald). *Ind. Eng. Chem. Anal. Ed. 17,* 599 (September 1945). The copper content of copper naphthenate preservatives (mildewcides) can be determined by extracting them with 10 *N* sulfuric acid at 60°C. Unless an organic solvent miscible with water has been used in the preservative mixture, the solution of copper sulfate can be filtered and analyzed without further treatment. If a water-miscible solvent was used, the copper should be separated as the oxide or sulfide first. Analyses are given for two samples to show the results compare well with those obtained on samples whose organic matter was destroyed by Kjeldahl digestion.

X. WASTE RECOVERY AND UTILIZATION; WASTE PREVENTION

AGRICULTURAL RESEARCH. Farm waste research. Anon. *Chem. Industries 57,* No. 1, 94, 96 (July 1945). Drs. E. C. Lathrop and J. W. Dunning, of the U. S. Department of Agriculture's Northern Regional Research Laboratory, have worked out a process for producing 90-95 gal. motor fuel, roughly half of which is ethyl alcohol, from a ton of cottonseed hulls or corncobs. The process is ready for investigation on a semi-plant scale. The New Orleans Laboratory of the U. S. Department of Agriculture has discovered that mercerized cotton-tire cords retain their strength longer when exposed to high temperatures than do the normal cotton-tire cords. "The complete results of the new process cotton-tire cord are being covered by 'military security' . . ."

LIGNIN. Lignin—an economic liability or a chemical asset. Harry F. Lewis, The Institute of Paper Chemistry. *Chem. Eng. News 23,* 1074-80 (June 25, 1945). "The pulp and paper industry is burning or running into . . . sewers each year about 2,500,000 tons of lignin; the lignin wastes of the lumber industry make that amount seem insignificant . . ." Most of the lignin contained in 5,000,000 tons of flax straw and in 23,000,000 tons of cotton stalks, as well as in many other annual plants, is wasted. Chemicals that can be made from lignin and the various uses developed for waste sulfite liquor are discussed at some length, but it is stressed that unfortunately, it is not yet known whether it is economical to make from lignin the chemicals that can come from it and that are now supplied by the coal-tar industry. Moreover, even if all the things now made from coal tar were made from lignin they would require only 38% of the lignin the sulfite paper mills alone are producing. In other words, "whether lignin is an economic liability or a chemical asset has not yet been determined".

WASTE UTILIZATION. Current developments in waste utilization. Harold R. Murdock, Consulting Chemical Engineer. *Ind. Eng. Chem. 37,* No. 9, Adv. Sect. pp. 97-8 (September 1945). Reclaiming rubber, reclaiming fine phosphate from sand-phosphate rock dumps, and using "waste" spent caustic soda solutions originally used for removal of hydrogen sulfide and organic sulfides from crude oil to recover chemicals from sulfite paper pulp mills are cited as specific examples of the three methods of disposing of waste—consuming it as a raw material in your own plant, making it into a by-product, and selling it to another industry.

XI. CLEANSING

IRONING TEMPERATURES. The problem of ironing temperatures. Anon. *Rayon Textile Monthly 26,* 466 (September 1945). The Good Housekeeping Institute studied the actual ironing temperatures used in ironing washable fabrics containing rayon, rayon mixtures, silk, linen, nylon, shear and heavy cottons, starched and unstarched cotton, and cotton blends. As a result they recommend the following ranges of temperatures to builders of electric irons: rayon-low and nylon, 300-350°F.; rayon-high and silk, 350-400°; lightly starched cottons, 400-500°; wool pressing, 450-500°; and heavy cottons and linens, 500-550°. "They recommend correct ironing instructions and proper dampening recommendations on all clothing *in the form of labels.*"

XII. HAZARDS; SAFETY PRECAUTIONS

XII, 1. Fire

CARD FIRES. Card fires. How to prevent them and what to do when they occur. Anon. *Saco-Lowell Bull. 17,* No. 3, 43-5 (September 1945). Specific directions are given for putting out card fires and for reconditioning cards which have been afire, in an article which quotes underwriters statistics on the causes of card fires and amplifies the figures with an account of specific dangerous practices.

XII, 2. Accidents

ACCIDENT PREVENTION. What the supervisor should know about accident prevention. A. C. Phelps, Brandon Corp. *Textile Bull. 69,* No. 2, 24 (September 15, 1945). A supervisor "should know enough of the facts concerning accident history, statistics and theory to know as a matter of conviction, that accidents are . . . *preventable* . . . that he is the key man in the prevention of accidents, and that his is the primary responsibility . . . [and] his place in the scheme of organization, and the organization itself." He should know the jobs being performed by his men, the latter's physical and psychological limitations, the safety program of the plant, methods used in preventing accidents, casualty analysis and record keeping, first aid, and ways of teaching the workers to be "safety conscious".

ACCIDENTS. Investigation of accidents. I-II. E. S. Greene, Aetna Casualty & Surety Co. *Cotton (U. S.) 109,* No. 9, 99-102 (September 1945) and No. 10, 120-23 (October 1945). "No mill which does not investigate its accidents can hope to improve its accidence experience." The investigation should be started as soon after the accident as possible. It should include interviews with the witnesses and the injured; examination of the injurious object; and a careful review of existing job practice and instruction, and of safety instruction. A specific example of the amputation of a worker's hand by a choked picker illustrates the investigating technique. Whether the investigation is done by the foreman, superintendent, or safety director depends to a great extent on the size of the plant. One mill analyzed its accident history for 1944 and learned to its surprise that falls accounted for 30% and eye injuries 20% of its injuries, when management was of the opinion that the majority was caused by running machinery, lifting, etc.

EXPLOSIVE DIAZONIUM COMPOUNDS. Explosive reaction of diazonium compounds with sulfides of sodium. Paul Nawiasky, Fred Ebersole, and Jesse Werner, General Aniline & Film Corp. *Chem. Eng. News 23,* 1247 (July 25, 1945). Since the extremely dangerous character of the explosive compounds formed by the reaction of diazo compounds with sodium polysulfide is claimed not to have been stressed in the literature (ten literature and two patent references are cited), chemists are warned here to employ adequate safety precautions in experimenting with this reaction.

XII, 3. Occupational poisoning and diseases

FATIGUE. Find fatigue caused by boredom as well as overwork. Waldemar Schweisheimer, M. D. *Textile Colorist Converter 67,* No. 9, 36 (September 1945). According to a report by Rex B. Hersey quoted in "an interesting book by Marie Beynon Ray about fatigue and being tired" (no bibliographic data are given), boredom fatigues workers almost as much as nervous strain. This was proved by studying workers in a mill handling cotton, silk, and wool fibers. The wool workers were most tired, because wool breaks frequently and they were on the jump all day long; the silk workers were the next most tired, because silk so seldom breaks that they did not have enough to keep them occupied; and the cotton workers were relatively well off, because cotton breaks frequently enough to keep them busy, but not enough to put them under nervous strain. Poor digestion, lack of sleep, worries, and poor lighting also cause fatigue.

XII, 4. Deterioration (corrosion and decay)

CORROSION PREVENTION. Corrosion prevention by controlled calcium carbonate scale. Sheppard T. Powell, H. E. Bacon, and J. R. Lill. *Ind. Eng. Chem. 37,* 842-6 (September 1945). The use of calcium carbonate scale of controlled thickness for preventing the corrosion of cooling tower systems "serving steel equipment" was investigated at plants constructed during the war when copper alloys were scarce. "The study revealed factors that markedly affect the success of the treatment. . . . If rising temperatures cause the actual pH of the water to drop at the same rate as the calcium carbonate saturation pH, scale of uniform thickness will be deposited over the entire temperature range. Conditions under which this occurs are described."

XIII. TEXTILE MILLS

ACCOUNTING. Correct depreciation rates will help postwar success. Fred Merish. *Textile World 95,* No. 7, 121, 180, 182, 184, 186 (July 1945). The "general-average basis for charging off depreciation has many pit-falls. Mills should use their own experience figures to save on taxes and avoid falsely low costs." Mills that operated longer than normal hours during the war should take into account the depreciation caused by wear and tear, as well as by aging. "Few textile mill owners consider obsolescence. From now on, its omission may be costly." It is particularly important to consider obsolescence forced by technological advances, because it will be very high in the period immediately following the war. "Tax savings effected" by proper estimation of depreciation "and increased profits on sales" at the higher prices justified by the higher depreciation rates "will help swell modernization funds for the postwar period". Changes made in depreciation and obsolescence rates must be justified to the Treasury Department, if requested.

ACCOUNTING SYSTEM. Textile accounts. A system of accountancy including a chosen standard of raw materials costs. Walter Stross. *Textile Mfr. 71,* 201-5 (May 1945). A model accounting system for a mill spinning and weaving grey goods for an attached converting business, which sells the bulk of the cloth after it is finished, is discussed and illustrated with sample accounts from the materials adjustment, sales, stock, administrative, auxiliary services, spinning, and weaving departments. The article is based on British practices.

COLOR MATCHING. Systematised colour matching. George E. Sheard. *Textile Mfr. 71,* 206-12 (May 1945). Methods, said to be practicable and sound fundamentally, which can be adopted for the routine matching of colors, for the production of samples, and the distribution of orders are discussed. Tables and charts clarify the points made.

COTTON MILL. Olympia plant of Pacific Mills, Columbia, South Carolina. Anon. *Saco-Lowell Bull. 17,* No. 3, 22-6 (September 1945). Photographs show Saco-Lowell equipment installed recently in the Olympia plant of Pacific Mills, which at the time it was built, 1900, amazed the world by housing 100,000 spindles under one roof. The equipment pictured includes the opening room; a one-process picker; the carding, drawing, and roving sections; and the spinning room. Good-running work and excellent housekeeping are said to characterize the mill.

DESIGN CENTER. Washable cottons need design center. Virginia Jewel, The Cotton-Textile Institute, National Cotton Council. *Textile Colorist Converter 67,* No. 9, 20-21, 39 (September 1945). A clearing house for marketing designs

made by independent artists, to operate along the lines of the one run in England by the Cotton Board of Manchester (described in *Ibid.,* 20, 38, by J. Cleveland Bell) is urged in an article presenting the difficulties facing textile artists in reaching interested mills, and the difficulties facing mills in getting apprentice designers and consultants. Such a service is needed by the cotton-finishing industry particularly, because less attention has been paid to the design of cottons than to the design of rayons and silks. The cost of good designs should be spread "by launching them one season in a confined way to exclusive cutters, then repeat them next season for mass distribution". Two healthy signs are the "closer working relationship [arising] between the garment designer and the converter" and "store-wide promotions [by some leading stores] of specific fabrics made up in a planned group of merchandise."

DESIGN CONSULTANTS. The industrial design consultant. F. A. Mercer, Editor of *Art and Industry. Textile Mfr. 71,* 183-5 (May 1945). In a paper before the Royal Society of Arts, Mercer predicted that the English, like the Americans, will find increasing use for consultants in the designing of articles for commercial manufacture. These designers will not supplant design departments, but will bring to those hiring them their knowledge of markets, their artistic and technical skill in design, and their ability to work rapidly and efficiently, as outsiders, without arousing interdepartmental friction. The consultants need to have executive ability, and the ability to teach their own employees their taste and technical knowledge. The various methods of paying consultants are discussed.

DESIGN PIRACY. Patents and trade-marks problems in a world at peace. V. Alexander Scher, Richards & Geier, Patent and Trade-Mark Attorneys. *Rayon Textile Monthly 26,* 500-01 (September 1945). European countries in which it has been impossible to file patent applications during the war pretty generally have declared a convention-date moratorium allowing patent applications to be filed now, even though the parent patent may have issued during the war in the home country. The length of time this moratorium will last is not known. The German patent office has been taken over by United States forces and the data contained there are to be made available. In Japan the same policy probably will obtain. People exporting to South America are urged to secure prompt trade-mark protection, because unscrupulous traders have not hesitated in the past to use and register in their own names valuable trade-marks belonging to American and other manufacturers.

DESIGN PROTECTION. With the Nazis and Japs under control—what about design pirates? Sylvan Gotshal, Weil, Gotshal & Manges. *Linens & Domestics 30,* No. 6, 50 (September 1945). All

persons interested in the protection of original designs from piracy are urged to unite in demanding protective legislation from Congress. This is the gist of the last chapter (reprinted here) of Gotshal's book, "The Pirates Will Get You!", published by the Columbia University Press.

ELECTRONICS. Electronics at work for textiles. Harold E. Reed, Assistant Editor, *Textile World 95,* No. 7, 83-90 (July 1945). "Potential applications of electronic devices are indicated [in charts] for each textile processing operation. Basic operations of electronic tubes include rectifying, amplifying, generating, controlling, and the transforming of light into electrical current. These functions are used for air cleaning, moisture control, twist setting, temperature control, and door opening." The charts are said to be based on information gathered in a survey conducted by the Research Department, McGraw-Hill Publishing Co., for the results of which, see *Textile Technology Digest 2,* 220 (May 1945).

FLAX MILLS. Modernising flax mill equipment and methods. IX. Factors affecting efficiency. S. A. G. Caldwell. *Textile Mfr. 71,* 188-90 (May 1945). The efficient spinning of flax not only requires up-to-date machinery: the machinery must be housed and laid out properly, suitable motive power must be provided, the lighting and ventilation must be good, and the air in the mill must be humidified and freed of dust. Each of these points is discussed. Purchased electric power, fluorescent lights, and pneumatic cleaning equipment are recommended.

LABOR RELATIONS. Wool textile wages. Advances under new agreements. Anon. *Wool Record & Textile World 68,* 542, 544 (September 27, 1945). Approximately 170,000 workers in the woolen and allied industries in Cheshire and Derbyshire, England, received increases in wages starting in November under the terms of an agreement between the Wool (and Allied) Textile Employers' Council and the National Association of Unions in the Textile Trade. Details of the increases for ordinary and pieceworkers, and workers on the night shift; and of the cost-of-living wages are given.

LABOR RELATIONS. Psychology and the cotton industry. William Hodgkins. *Textile Weekly 36,* 586, 588 (September 28, 1945). Industrial psychologists are needed in British cotton mills to handle such problems as spoiled boys 15 to 18 years old who are "disaffected", troubles between foremen and workers, the introduction of apprentices to mill work, and vocational guidance of all employees. The article is an abstract of a lecture to the Oldham and District Textile Society, September 13, 1945.

LABOR RELATIONS. Nashua induction program aids returning veterans. Guy W. Swallow, Cecil Barnes, and Anne Willard, Nashua Mfg. Co. *Textile World 95,* No. 7, 102-3 (July 1945). Labor turnover has been reduced greatly at the Nashua Division of the Nashua Mfg. Co. since the following program has been adopted. Prospective employees are introduced to the overseers under whom they would work, are shown where they would work, and are given a demonstration of the particular operations they would be expected to perform. If they are hired, they are told all the things a new employee wonders about—the history of the mill, when and how they will be paid, facts about the union and the union contract, transportation facilities available, safety rules, smoking rules, workmen's compensation, etc. This same information is contained in a booklet, "You . . . and Your Job with Nashua", which is given to them. After the new employees have been working for two weeks, interviewers visit them in the mill and ask them how they like the work to which they have been assigned, and whether any special difficulties have arisen on which they need help, e. g., transportation, understanding payroll deductions. Interviews are continued until the employees seem well adjusted. If they do quit, employees are interviewed to learn their reasons for leaving, and the results of these "exit-interviews" are reported to the overseers.

ORDER CONTROL. Order control in worsted spinning. G. E. Sheard. *Textile Mfr. 71,* 388-9 (September 1945). The system used by a worsted spinning mill of moderate size (not named) in keeping track of its orders is outlined briefly. The system is based on the Gantt method, but differs in that colored lines are used to represent the progress of material through the plant. Information is entered on the main chart from reports received daily from the foremen of the various departments.

PLANT MANAGEMENT. Current developments in plant management. Walter von Pechmann. *Ind. Eng. Chem. 37,* No. 9, Adv. Sect. pp. 103-4 (September 1945). Time studies are recommended to the chemical industry for use in laying out jobs; determining the flow of work; helping select equipment and raw materials, and design equipment; improving industrial relations; standardizing the cost of the product; and giving management the statistical information it needs for making quick, intelligent decisions. The studies must be made by professional industrial engineers experienced in time-study work.

SELSYNS. Selsyn design and application. T. C. Johnson, General Electric Co. *Elec. Eng. 64,* 703-8 (October 1945). Selsyns are electric machines with synchronized relative positions of their shafts even though separated by considerable distances. The term is a contraction of "self-synchronous". These units are classified as power, instrument, and indicator and control selsyns. Designs, applications, performance, and specifications for selsyn systems are described.

TEMPERATURE MEASUREMENT. Heat-flow effects in a resistance-type thermometer. N. P. Millar, General Electric Co. *Elec. Eng. 64,* T678-84 (October 1945). The effect of the speed of agitation of the medium whose temperature is being measured with a resistance thermometer on the accuracy of the measurement is analyzed for a two-lead type used in airplanes for measurement of the engine-oil, engine-coolant, cabin-air, and free-air temperatures. The equations developed for "several conditions of ambient temperature affecting the screw-base head" are said to be generally applicable, but those describing the response time have to be modified and adapted for each make of temperature bulb.

TEXTILE MILLS. Engineering and maintenance. Modern equipment and methods do a better job, in less time, at lower cost. A review of progress in the mechanical fields. Henry Miedendorp, Jr. *Rayon Textile Monthly 26,* 467-72 (September 1945). Textile mills are saving money by installing automatic control systems in bleaching, dyeing, mercerizing, and slashing operations; by using electronic devices for positioning, matching, counting, inspecting, etc.—the most recent is a device for setting the twist of rayon; by using properly designed power systems (the group drive and multiple V-belt drives are claimed to be the most significant developments in this line); by systematizing lubrication and using self-sealed bearings; by improving lighting (the principles of light engineering are given a page's discussion); by conditioning the water used (gravity- and pressure-filtration and zeolite-softening are discussed); by laying out plants for the efficient handling of materials throughout their processing — an overhead trolley system is discussed; and by intelligent use of infrared radiation to dry textiles. The article is illustrated with at least one picture for each main point made.

XIII, 1. Buildings

GLASS BLOCKS. Glass block reduces mill-maintenance problems. James W. Taylor, Ware Shoals Mfg. Co. *Textile World 95,* No. 7, 117, 119, 198, 202 (July 1945). Because conventional factory windows are so difficult to maintain (they break frequently, they are hard to keep clean because of the excessive condensation on them of atmospheric moisture during Winter, and the sashes around them corrode or decay rapidly), the Ware Shoals Mfg. Co. adopted glass-block panels in their place. Glass blocks are better thermal insulators than ordinary window glass; they can be installed by ordinary carpenters, if they follow the directions of the manufacturer; and they give light without glare. Pictures show the interior of the Ware Shoals canteen and the outside of the bleachery. A table shows that for relative humidities between 70 and 80%, and inside temperatures of 75 to 80°, the outside temperatures which produce condensation of moisture on the inside are 13 to 20° lower in the case of glass blocks than in the case of ordinary window glass.

XIII, 2. Machinery

TEXTILE MACHINERY. Moving the work instead of the operator in the textile industry. E. J. Abbott, Abbott Machine Co. *Rayon Textile Monthly 26,* 452 (September 1945). The textile industry has lagged behind other industries in rarely using the conveyor system for bringing work past the operator, except in some finishing processes. "The moving conveyor method can be adapted however to quite a great many manufacturing operations in textiles and, doubtless, much of the future progress will be made by this method." Abbotts "pioneered in this field, picking out . . . one of the simplest problems, . . . winding." Moving the winding spindles and having the operator replace empty bobbins with full ones, find the end on the winding package, and tie them together doubles the output per operator. Installation of automatic, tie-in heads; allowing the cleaning to be done at one point in the travel of the spindles; and other "convenient applications of attention" have increased production per operator three or four times. An automatic bobbin quiller designed along these same lines doffs the full bobbins and dons the empty ones with only one automatic head, instead of one on each winding unit. One quiller operator does five to ten times as much as an operator did on the older types of machines. Abbotts have designed successful, experimental traveling-spindle twisters, traveling-spindle spinning frames, etc. It is claimed that the principle also could be applied to weaving machinery.

XIII, 3. Power

XIII, 3b. Electric

ELECTRIC POWER. Electric driving of textile factories. IV. E. Howlett. *Textile Mgr. 71,* 361-3 (September 1945). Since substantial reductions in electric rates are given to factories operating at power factors greater than 0.8, it pays to improve the power factor by any of the following methods: (a) installing a static condenser in the circuit with each motor, which is not recommended for motors under 25 hp.; (b) installing a non-lag or power-factor correction motor or motors; (c) installing a synchronous condenser for the whole plant, if it consists of several buildings each containing many motors; and (d) installing static condensers for groups of machines, which is practical where there are a large number of induction motors in one building.

ELECTRIFICATION. Electric motors in textile mills. What are the facts? George H. Brook. *Wool Record & Textile World 68,* 494, 496, 498 (September 20, 1945). At the present price of coal in England, purchased electric power is cheaper

than steam for the average woolen mill, as is illustrated by examples. Figures are given on current consumption of motors engaged in grinding rags, teasing and willeying, carding, mule and ring spinning, twisting, weaving (both individual and group drives are considered), milling, finishing, and dyeing. And the question of individual versus group drive is taken up for the chief types of textile machinery. It is stated that the information is "based on fifty recent woolen mill change-overs undertaken by the writer".

ELECTRIFICATION. Electrification of the "Spero" Mills. Unique change-over: not a lb. of yarn lost. Anon. *Textile Weekly 36,* 360-62, 364 (August 24, 1945). The Tatton and Ordsall Mills of Richard Haworth and Co., Ltd., are now completely electrified. The change-over from steam to electricity was accomplished without any loss in production, according to this newspaper-type description of the dedication of the plant, etc. There are two plans showing the general arrangements of the new machinery.

XIII, 4. Materials handling and transport

HANDLING MATERIALS. Specialized hoists for laundry and dye-house service. A. G. Arend. *Textile Weekly 36,* 606, 608, 610, 612 (September 28, 1945). Versatile, easily controlled, light hoisting machinery for use in dyehouses and laundries is described, and its auxiliary uses are pointed out.

MATHEWS ROLLER CONVEYERS. LIGHT, MEDIUM AND HEAVY DUTY. Bulletin of the Mathews Conveyer Co., Ellwood City, Pa., n. d.; 23 pp.; gratis.

XIII, 5. Lighting

LIGHTING. Good illumination in the textile industry. Bright colors increase industrial efficiency. Anon. *Nat'l Canvas Goods Mfrs. Review 21,* No. 6, 12, 14 (September 1945). Du Pont, the Philadelphia Electric Co., the Illuminating Engineering Society, and Henry Miedendorp, Jr., are cited as recommending a high general level of illumination for textile and other mills; walls, ceilings, and floors painted in light colors to reflect the light; and production machinery painted in bright, contrasting finishes, with danger spots marked flaming red. The actual minimum intensities of light at 30 inches from the floor recommended by the Illuminating Engineering Society for various textile operations are:

Operation	Minimum Foot-Candles
Silk and Rayon Manufacture	
Soaking, fugitive tinting and conditioning or setting of twist	10
Winding, twisting, rewinding, coning, quilling, slashing	30
Warping on creel, on running ends, on reel, on beam, on warp at beaming	50
Weaving on heddles and reed	10
Weaving on warp back of harness	20
Weaving on woven cloth	30
Drawing-in on heddles and on reed	100*
Cotton Manufacture	
Opening, mixing, picking, carding and drawing	10
Slubbing, roving, spinning	20
Spooling, warping on comb	20
Beaming and slashing on comb	
Gray goods	20
Denim	50–100
Inspection	
Gray goods, hand turning	50
Denim, rapidly moving	100*
Automatic tying-in, weaving	50–100
Drawing-in by hand	100*
Weaving	25
Woolen Manufacture	
Carding, picking, washing, combing	15
Twisting, dyeing	15
Drawing-in, warping	100*
Weaving dark goods	50
Weaving light goods	25
Knitting machines	20
Finished Products Manufacture	
Cutting, inspection, sewing	
Light goods	20
Dark goods	100*
Pressing, cloth treating	
Light goods	10
Dark goods	20

*Plus supplementary lighting of unspecified intensity.

XIII, 6. Atmospheric control

AIR CONDITIONING. Rayon plant weather made to order. Anon. *Crown News,* full reference not cited in *Rayon Textile Monthly 26,* 289-90 (June 1945). The temperature and humidity of the various departments of the Meadville, Pa., plant of the American Viscose Corp., which makes acetate yarn and staple, are controlled by the department which also has charge of the acetone recovery. The facilities required for the air conditioning are mentioned.

AIR-FILTER BAGS. C. C. Marston. Brit. P. 564 161. "Air filters include a sleeve through which dust-laden air passes; a power drive for shaking the bags can be applied. The filter bag is divided into a number of non-extensible parts by extensible sections such as elastic webbing to render the bag more resistant to shocks."

MAINTENANCE OF HUMIDIFYING EQUIPMENT. Field Service-Special Report. Industrial Cleaning Materials and Methods, F. 6218 of the Oakite Products, Inc., New York, N. Y., 1945; 4 pp.; gratis. Directions are given for cleaning various types of humidifiers with Oakite Composition No. 52 to remove slime, and deposits of scale and the like from humidifiers used in the textile industry and others.

XIII, 8. Water supply

SLIME-FORMING ORGANISMS. Identification and characteristics of typical slime-forming organisms. R. B. Martin and John G. Dobson, Wallace & Tiernan, Inc. *Paper Trade J. 121,* TAPPI 143-50 (October 11, 1945). Methods of recognizing and eliminating the common slime-forming algae, fungi, and bacteria (*B. subtilis* and *B. mega-*

therium variants; "iron"; and "sulfur") from paper mills are discussed with the aid of 18 photomicrographs of the organisms. Each organism discovered should be traced to its source, fresh water and paper stocks should be sterilized (treatment with chlorine gas and chloramines is discussed), and sterile conditions should be maintained in the stock and white water systems of the mill. Each mill is a separate problem. "Particular caution must be exercised to determine the most economical and satisfactory points of application of the sterilizing chemical."

WATER SUPPLY. Pure, clean, soft water essential for quality textiles. Henry Miedendorp, Jr., Textile Engineer. *Rayon Textile Monthly 26,* 287-8 (June 1945). Coagulators, filters, and Zeolite water softeners are discussed in a very brief account of the importance of pure, clean, soft water for dyeing and printing textiles, and of the methods of making it from raw water.

XIV. TEXTILE RESEARCH

ENGINEERING EDUCATION. Explorations in engineering education. Arthur B. Bronwell, Northwestern University. *Proc. Institute Radio Engineers 33,* 735-40 (November 1945). The chief recommendations made by 18 sections of the Institute of Radio Engineers on changes to be made in the curricula of engineering schools are discussed. The recommendations were made at the request of Dr. W. L. Everitt of the Institute Committee on Education.

GOVERNMENT RESEARCH. Scientific research bills before the United States Senate. Anon. *Science 102,* 411-6 (October 26, 1945). The bills for the fostering and control of research in the United States by the government, which are now before the United States Senate, are analyzed to show their objects and their major and minor areas of disagreement. The bills are: S. 1297, sponsored by Kilgore, Pepper, and Johnson; S. 1285, sponsored by Magnuson; S. 1248, sponsored by Fulbright; S. 825, sponsored by Byrd; and H. R. 3440, sponsored by May.

LOOM RESEARCH. Defends modern research in loom field. Anon. *Cotton Chats* (August 1945); excerpts in *Rayon Textile Monthly 26,* 455 (September 1945). Some of the results of research on looms that may be applied relatively soon are: an all-metal lay no heavier than a wooden lay and with equivalent strength; an electronically operated warp-stop motion; a loom frame braced and counterbalanced, or possibly with an integral base, such as is used on machine tools, to eliminate noise and thrash; and an automatic bobbin filler. Research not as near to being finished is being carried out on loom-picking and -checking motions, design of circular looms, and machinery for the production of non-woven cloth.

PATENT SYSTEM. Little keys unlock big doors. Donald H. Sweet. *Chem. Eng. News 23,* 1081 (June 25, 1945). The cause for most of the complaints voiced during the past decade against the patent system of the United States is stated to be the inadequate budget on which the Patent Office is operating. So few people are employed that "the average total amount of time an examiner spends in (1) reading a new application; (2) making a search; (3) writing the first office action; (4) reading the first amendment and argument; (5) making further search; (6) writing the second office action; (7, 8, 9, 10, etc.?) until final rejection or allowance, is believed to be of the order of magnitude of two days!" Moreover, "in many, if not most, arts, the reference material available to the examiner is seriously inadequate, and what there is is not kept in very good order". Since our patent system as a whole at present represents total assets variously assessed between five and fifty billions of dollars, it would pay the nation to spend more money on the Patent Office. It is predicted that careful examination would reduce the number of patents issued from about 50,000 to about 15,000 per year; that the more carefully examined patents would have "greater presumptive validity and enforceability"; and that a large proportion of the large amounts spent on patent litigation could be saved. In any event, salaries should be high enough that the examining corps should not have to function as a training school for patent attorneys, with an annual turnover of personnel.

PATENTS. Value of patents. Frederic B. Schramm, Patent Lawyer. *Elec. Eng. 64,* 380-1 (October 1945). It is claimed that the marked decrease (54%) in the number of patent applications filed during the period 1930-43 from the number filed in the previous 13 years was caused in great part by court and other decisions making it difficult for an inventor to enforce his invention, or even, because of subjective standards of what constitutes invention, to get a patent. One of the recommendations of the National Patent Planning Commission was the enactment by Congress of a rule requiring use of objective standards of invention. "Such a rule would go far toward restoring the value of patents, and should be enacted."

RESEARCH LABORATORY. Celanese buys buildings for Jersey laboratories. Anon. *Rayon Textile Monthly 26,* 433 (September 1945). The Celanese Corp. of America has purchased buildings occupied by the Edison Junior High School, Summit, N. J., as a first step "in the concentration of the company's technological and research activities in the fields of plastics, textiles and chemicals in a single central laboratory". "The company will convert the school into a modern industrial laboratory and later make extensions to double the present size of the buildings . . . to accommodate the approximately 500 scientists, chemists and technicians who will work in the new unit."

RESEARCH LABORATORY. Country homes for research laboratories. W. B. Foulk, princeton University. *Textile Research J. 15,* 190-93 (May

1945). "The comparative ease with which a mansion can be converted to meet the requirements for a research laboratory or for educational purposes" is illustrated with the case of the laboratory of the Textile Research Institute at Princeton, N. J. A picture of the outside of laboratory and the first- and second-floor plans illustrate the description.

SCHOLARSHIPS. Warwick establishes scholarships in chemistry. Anon. *Textile Bull. 69,* No. 2, 51 (September 15, 1945). The Warwick Chemical Foundation was established to promote education and research in chemistry, according to an announcement made by Ernest Nathan, president of Warwick Chemical Co., Providence, R. I. The foundation will provide two scholarships, one at Rhode Island State College, and the other in some as yet undesignated southern college.

WOOL RESEARCH. Textile research and the dominance of the wool fibre. A. F. Barker, Emeritus Professor of Leeds University. *Textile J. Australia 20,* 248-50 (August 20, 1945). While urging the Australian wool industry to foster scientific research in wool fibers cloth manufacture, cloth finishing, and textile machinery in its schools and mills, Barker points out that research being done in England is on Lincoln or Cotswold wool, which is very different in structure and properties from the Australian Merino. Moreover much of the research, like that by Astbury of Leeds, which is criticized in some detail, is done to "demonstrate . . . [the] physical and chemical principles [of the fibers] rather than utilising these scientific principles in the interpretation of much that is already known to the technologist, and finally, in the control of the manufacturing processes."

WOOL RESEARCH. The realities of science in the textile industry. Symposium, Textile Society of Australia, August 3, 1945. *Textile J. Australia 20,* 276-7 (August 20, 1945). B. H. Wilsdon, Woollen and Worsted Industries' Research Association, stated that wool will be having terrific competition from synthetic fibers during the next few years. To meet this competition costs of manufacturing wool should be made as low as possible. Research is needed on the various manufacturings. J. B. Speakman, Leeds University, seconded these views. A. C. Goodings, The Ontario Research Foundation, Canada, claimed that before the manufacturer can tell the sheep grower what kind of wool he should grow, the manufacturer must decide what the role of crimp is in the finished cloth. Research is needed on carbonizing, scouring, and drawing.

DESCRIPTIVE INDEX OF CALCO TECHNICAL BULLETINS. Technical Bulletin No. 761 of the Calco Chemical Division of the American Cyanamid Co., Bound Brook, N. J., 1945; 32 pp.; gratis.

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